



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

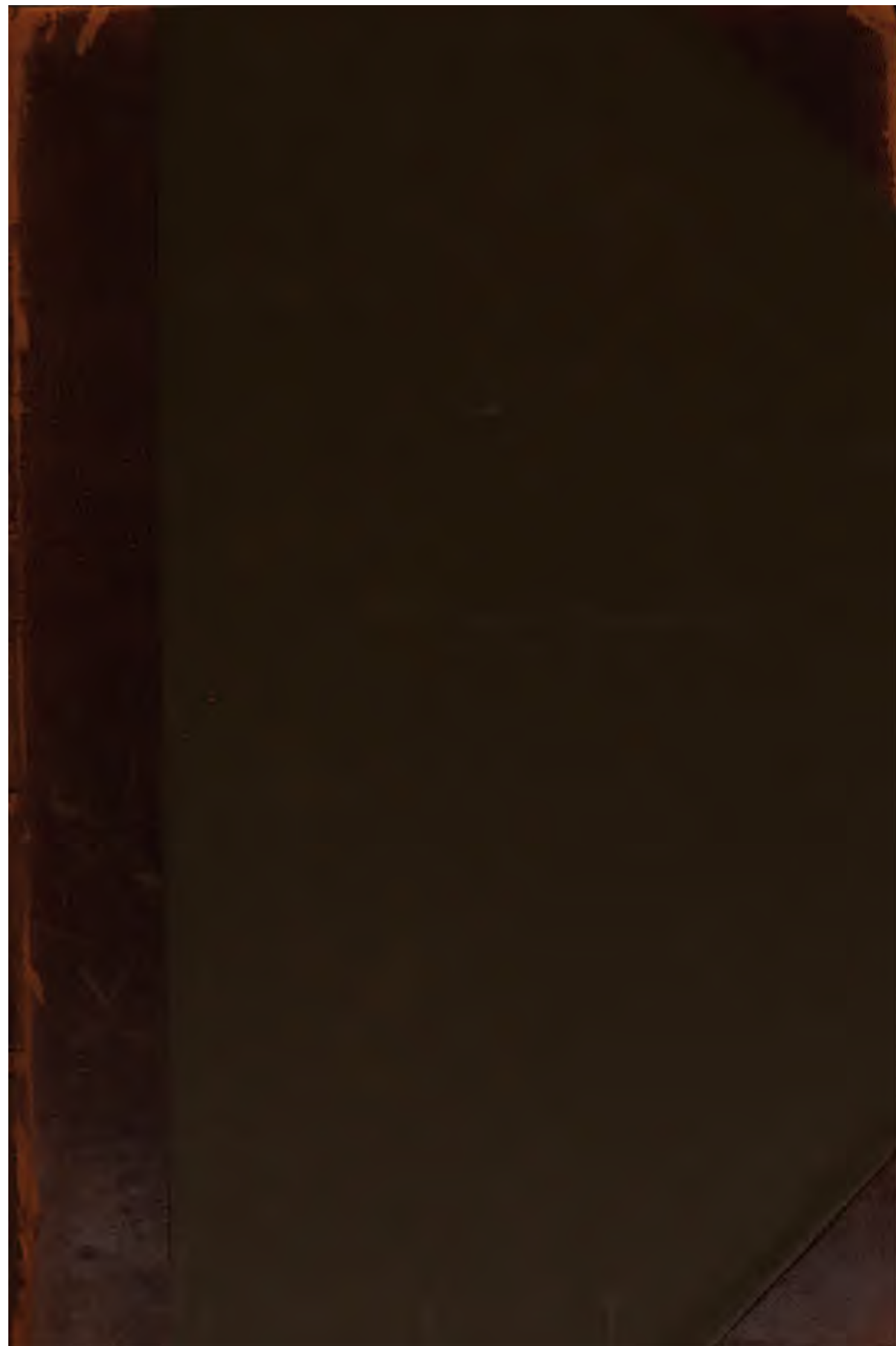
Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>





STANFORD
MAY 1964
STACKS
LIBRARY

· Gt. Brit.
//

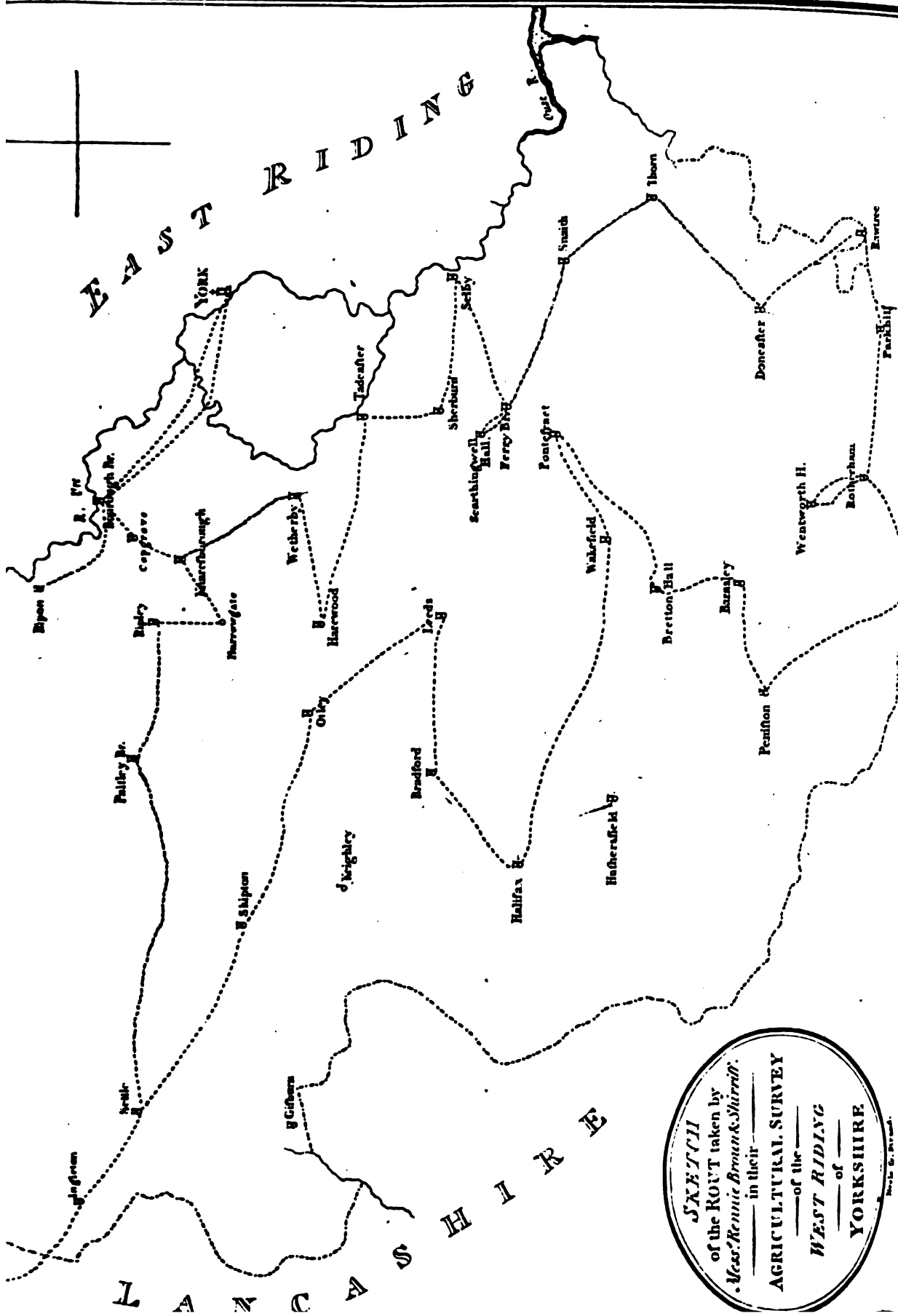
GENERAL VIEW
OF THE
A G R I C U L T U R E
OF THE WEST RIDING OF
Y O R K S H I R E.

W E W

S 455

403

v. 6



SKETCH
 of the ROUTE taken by
Messrs. Rennie Brown & Sherriff.
 in their
 AGRICULTURAL SURVEY
 of the
 WEST RIDING
 of
 YORKSHIRE
 1861.

GENERAL VIEW
OF THE
A G R I C U L T U R E
OF THE WEST RIDING OF
Y O R K S H I R E,
WITH OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

By MESSRS. RENNIE, BROUN, AND SHIRREFF.

GT Brit.
DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE AND
INTERNAL IMPROVEMENT.

LONDON:
PRINTED BY W. BULMER AND CO.

M.DCC.XCIV.
WFW

S455

A2

v.6.

no.1

ADVERTISEMENT.

THE following valuable communication, respecting the present state of Husbandry in the West Riding of Yorkshire, and the means of its improvement, drawn up for the consideration of the Board of Agriculture, is now printed, merely for the purpose of its being circulated there, in order that every person interested in the welfare of that county, may have it in his power, to examine it fully, before it is published. It is therefore requested, that any remark, or additional observation, which may occur to the reader, on the perusal of the following sheets, *may be written on the margin*, and transmitted to the Board of Agriculture, at its office in London, by whom the same shall be properly attended to ; and when the returns are completed, an account will be drawn up, on the state of agriculture in the West Riding, from the information thus accumulated, which, it is believed, will be found greatly superior to any thing of the kind ever yet made public.

The Board has adopted the same plan, in regard to all the other counties in the united kingdom ; and, it is hardly necessary to add, will be happy to give every assistance in its power, to any person, who may be desirous of improving the breed of cattle, sheep, &c. or of trying any useful experiment in husbandry.

TO THE READER.

[T is requested, that this Paper, may be returned to the Board of Agriculture, as soon as may be convenient.

It is hardly necessary to add, that the Board does not consider itself responsible, for any fact or observation contained in these Reports, which, at present, are printed and circulated, for the purpose merely of procuring additional information, and of enabling every one, to contribute his mite, to the improvement of his country.

February, 1794.

ADVERTISEMENT.

THE following valuable communication, respecting the present state of Husbandry in the West Riding of Yorkshire, and the means of its improvement, drawn up for the consideration of the Board of Agriculture, is now printed, merely for the purpose of its being circulated there, in order that every person interested in the welfare of that county, may have it in his power, to examine it fully, before it is published. It is therefore requested, that any remark, or additional observation, which may occur to the reader, on the perusal of the following sheets, *may be written on the margin*, and transmitted to the Board of Agriculture, at its office in London, by whom the same shall be properly attended to; and when the returns are completed, an account will be drawn up, of the state of agriculture in the West Riding, from the information thus accumulated, which, it is believed, will be found greatly superior to any thing of the kind ever yet made public.

The Board has adopted the same plan, in regard to all the other counties in the united kingdom; and, it is hardly necessary to add, will be happy to give every assistance in its power, to any person, who may be desirous of improving his breed of cattle, sheep, &c. or of trying any useful experiment in husbandry.

TO THE READER.

[IT is requested, that this Paper, may be returned to the Board of Agriculture, as soon as may be convenient.

It is hardly necessary to add, that the Board does not consider itself responsible, for any fact or observation contained in these Reports, which, at present, are printed and circulated, for the purpose merely of procuring additional information, and of enabling every one, to contribute his mite, to the improvement of his country.

February, 1794.

*To Sir JOHN SINCLAIR, Bart. President of the Board
of Agriculture.*

SIR,

IN compliance with your request, we have surveyed the West Riding of Yorkshire, and from the annexed Report, we trust the Board will receive satisfactory information, respecting the stock and husbandry of that important district.

During our survey, we used every means in our power, to obtain accurate information of the different systems under which the practice of husbandry was carried on, and made particular inquiries, into the mode by which estates are managed, as well as the nature of the connection that subsisted between landlord and tenant. It is possible, that from the extent of the West Riding, and the comparative shortness of time we could conveniently devote to this business, that some parts of the country, and some practices prevailing in it, may have escaped our attention. These circumstances, will, we hope, be duly considered by those, who peruse this Report. Any mistakes we may have inadvertently committed, we trust to the candour of the proprietors and farmers, to excuse and to rectify.

It gives us pleasure to acquaint you, that, in the course of our survey, we experienced every possible politeness and attention; all ranks in a manner vying with each other, to promote the public undertaking entrusted to us. Agreeable to your desire, a return is herewith made, of those persons who gave us assistance and information.

As very little has been written upon the general state of this district, and still less upon its agriculture; these circumstances rendered drawing up the Report, more difficult than it would otherwise have been. Mr. Young, in his Northern Tour, made several excursions in the West Riding; but the time since elapsed, makes his work, however valuable in other respects, of little use upon the present occasion. Mr. Marshall's Treatise upon the Yorkshire Husbandry, is almost wholly confined to the East Riding. No other agricultural writings, relative to the district, have come to our knowledge; but it is proper to acknowledge, that some information about the geographical and natural history of the Riding, is drawn from a publication called *Magna Britannia*, as well as from the Histories of *Knaresborough* and *Halifax*. We are also indebted to several respectable individuals, for a variety of local information, which we gratefully acknowledge.

As no interested motives can influence us upon this occasion, so we hope the causes we have stated as obstacles to improvements, and the remedies we have suggested for removing them, will be impartially considered by the inhabitants of the District; and if this Report in any shape contributes to promote their prosperity and happiness, we will account the time spent in making the survey most beneficially employed.

We are, with great respect, Sir,

Your most obedient humble servants,

Haddington, East Lothian,
January 24, 1794.

GEORGE RENNIE,
ROBERT BROWN,
JOHN SHIRREFF.

INTRODUCTION.

THE West Riding of Yorkshire is situated nearly in the centre of the kingdom, and although an inland District, yet from its numerous rivers and canals, it possesses all the advantages of a maritime province. It is 95 miles in length, 48 in breadth, and 320 in circumference: contains 2,450 square miles, or 1,568,000 statute acres, and about 400,000 inhabitants.

The West Riding is bounded on the East, by the river Ouse; on the North, by the North Riding; on the West, by parts of Westmoreland, Lancashire, and Cheshire; and on the South, by the counties of Nottingham and Derby. It is divided into nine Wapentakes, or Hundreds, and contains 28 Market-towns, the chief of which are Leeds, Sheffield, Wakefield, Halifax, Doncaster, and Rotheram, besides a very great number of populous villages.

The face of the country is in many parts strongly irregular. In the western and northern divisions of the District, a considerable portion is hilly and mountainous; but in these situations, it is intersected with numerous vales, carrying grass of the richest quality. The remainder is chiefly a flat, with no more risings than serve to variegate the prospect. The whole District is almost completely inclosed with stone dikes and hedges, which are kept in the most perfect condition; and there are few open fields, except where the ground is common or waste.

The nature and quality of the soil in this extensive District differs materially. There are all sorts, from the deep strong clay, and rich fertile loam, to the meanest peat earth. It is impossible to say, without an actual mensuration, which particular kind most prevails. Vicinity to great towns and superior culture have, no doubt, rendered a considerable part, that was originally barren, fertile and productive. In general it may be said, that a large moiety is of a quality naturally favourable to the purposes of

husbandry ; and under a proper system of management, will amply repay the farmer for his trouble and expence.

The climate is, in general, moderate. In the eastern parts of the Riding it is not esteemed so healthy, being subject to fogs and damps, from its low situation. The harvest over the greatest part may be styled early, commencing usually by the middle of August, and, except in backward seasons, is finished by the end of September. In the western parts, which are upland and hilly, the harvest is nearly a fortnight later than about Pontefract and Doncaster ; and, from their vicinity to the Irish Channel, a great deal more rain falls than in the eastern parts of the Riding.

The West Riding is eminent for the number of its great and navigable rivers. 1st. The Ouse, which takes this name at York, being formerly called the Eure, and in its course to the Humber receives all the other rivers that run through the District ; 2dly, The Don, or Dune, which is navigable nearly to Sheffield, and of great advantage to the trade of that neighbourhood : 3dly, The Calder, which flows along the borders, betwixt this Riding and Lancashire, and running east the country, falls into the Aire, five miles beyond Wakefield : 4thly, The Aire, or Air, a large river issuing from the mountain Penigent, which, with the aid of canals, is navigable to Leeds, Bradford, and Skipton. This river holds on a long course quite across the Riding, and falls into the Don near Snaith. 5thly, The Wharfe, which has its rise at the foot of the Craven hills, and after a course of more than 50 miles across the Riding, keeping a great way at an equal distance of 10 miles from the Aire, discharges itself into the Ouse. Besides these principal ones, there is a number of rivers of less importance.

The establishment of manufactures in the West Riding has been the principal cause of its present wealth. It is difficult to ascertain the period when they were first introduced, but there is reason to suppose, it was about the beginning of the fifteenth century. Camden, in his *Britannia*, fixes the introduction of manufactures to have been during the reigns of Henry the Eighth and Edward the Sixth. This æra may, however, be suspected ;

for there is a copy of a court-roll, as we were informed, still extant, dated at the court of the Prior of Lewes, held at Halifax on the Thursday after the Feast of St. Thomas, 2 Henry the Fifth, 1414, wherein Richard de Sunderland, and Joan his wife, surrender into the hands of the lord of the manor, an inclosure at Halifax, called the *Tenter Croft*; which is a strong presumption that manufactures were carried on there before that period.

The country chosen for carrying on these manufactures is admirably adapted to that purpose. The raw materials are abundant on every hand; and coals, which are indispensably necessary, are plentiful and cheap. The ground in the vicinity of the manufacturing towns has in general been originally barren, and in many parts little better than waste; but from the great increase of population, and the additional quantity of manure occasioned by the manufactures, the soil is now equal in value to that of places originally more fertile.

It appears to us, that manufactures have had a sensible effect in promoting agriculture in this District. By them a ready market is afforded for every particle of provisions that can be raised, without which agriculture must always be feeble and languid. They have, no doubt, raised the rate of wages considerably: this always follows of course, where trade prospers, and is a sure sign of wealth; but they have at the same time raised the value of the produce of land, which much more than enables the farmer to pay the increased rate of wages.

From all the inquiries we could make, we did not find that the effects of manufactures were detrimental to agriculture, by rendering hands scarce for carrying it on. In harvest the manufacturers generally leave their looms, and assist in reaping the crop. We could not hear of any season but what there were sufficient to answer the demand, except in 1792, at which time the manufacturers had orders to an uncommon extent. Even then, this scarcity was no further felt in the West Riding than by a great rise of wages; although we were informed that in the East Riding a very heavy loss was sustained.

Having now given this short description of the West Riding

of Yorkshire, it remains only in this place to add, that it is by far the most valuable of the three Districts into which that County is divided ; and whether it is considered with respect to magnitude, fertility of soil, local advantages, manufactures, or population, it will be found deserving the most minute attention, and worthy to be ranked with any province in the kingdom.

Without entering into a minute detail, for which we had collected the materials, should the Board at any time wish for it, we shall at present restrict ourselves to the giving of a general view of the present state of this important District, and of the obstacles to, and the means of, its improvement.

1. *PRESENT STATE OF THE AGRICULTURE OF THE DISTRICT.*

The husbandry of the West Riding differs so materially, that it is absolutely necessary, before discussing its particular parts, to give a few preliminary observations, tending to explain the respective systems that prevail in the several parts of that extensive District.

1st. There is the pasture lands, where grass is the chief object, and where cultivation by the plough is only considered in a secondary light.

The parts of the Riding where this system prevails, are at least one third of the whole. From Ripley to the western extremity of the Riding, almost all the good land is in grass; and where corn is raised, it is only upon the inferior soils. During the time we were in that part of the country, we hardly ever saw a plough; and a stack of corn was as great a rarity. Upon the higher grounds, there are immense tracts of waste, which are generally common among the contiguous possessors, and pastured by them with cattle and sheep. Some of them are stinted pastures, but the greatest part are under no limitations: the consequences of which are,—the grounds are oppressed, the stock upon them starved, and little benefit derived from them by the proprietors.

adly. There are the lands adjoining to the manufacturing towns. The greatest part of the ground is there occupied by persons who do not consider farming as a business, but regard it, only as a matter of convenience. The manufacturer has his inclosure, wherein he keeps milk cows for supporting his family, and horses for carrying his goods to market, and bringing back raw materials. This will apply to the greatest part of the land adjoining to the manufacturing towns; and although much ground is not, in this case, kept under the plough, yet comparatively more corn is raised, than in the division above described.

3dly. Those parts of the Riding where tillage is principally attended to, and grass only considered as the mean of bringing the corn husbandry to perfection.

If we run an imaginary line from Ripley southward by Leeds, Wakefield, and Barnesley, to Rotheram, we may affirm, that the greatest part eastward of it, till we come to the banks of the Ouse, which separates the West from the East Riding, is principally employed in raising corn. About Boroughbridge, Wetherby, Selby, &c. there is about one half of the fields under the plough. Further south, about Pontefract, Barnesley, and Rotheram, there is two-thirds; and to the eastward of Doncaster, to Thorn and Snaith, three-fourths of the land is managed in a similar way. There is not much waste in this division, and what is in that situation, is capable of great improvement.

4thly. The common fields. These are scattered over the whole of the last division, but are most numerous in that part of the country to the eastward of the great north road, from Doncaster to Boroughbridge. It is impossible even to guess at the quantity of land under this management. In general, it may be said they are extensive, and from the natural good quality of the soil, and the present imperfect state of culture, great room is afforded for solid and substantial improvement being effected upon all land coming under the description of common field.

5thly. The moors. These, besides the large tracts that abound in the first division, mostly lie in the south-west parts of the Riding, above Penneston and Sheffield. Upon them sheep are chiefly bred, and afterwards sold to the graziers in the lower parts of the country. A great part of them is common, which lays the proprietors under the same inconveniences as are already pointed out; and which might easily be remedied, by dividing and ascertaining the proportion which belongs to the respective proprietors.

Having finished this introductory sketch, we proceed to give a comprehensive view of the result of our inquiries during the survey.

Proprietors.—A considerable part of the landed property of

the West Riding is in the hands of small freeholders and copyholders: but there are likewise a great number of extensive proprietors. Few of the latter reside upon their estates, at least for a considerable part of the year; and the management of them is chiefly devolved upon their stewards or factors.

Size of farms.—A great majority of farms are comparatively small, and there are very few of that size, which in some other counties of the kingdom would be considered as large ones. The size varies so much that it is not easy to fix upon an average. Upon the arable lands we heard of none exceeding 300 acres, and for one of that extent, there are a dozen not fifty. In the grass division of the county, they are still smaller, and we often heard the occupier of 100 acres styled a great farmer.

Leases.—The greatest part of the land is set without lease; or, which is the same thing, the occupiers are removable upon six months warning. The leases, which in the common acceptation of the word can be considered as such, are of different durations, from 3 to 21 years; but three-fourths of the Riding are possessed from year to year, and this practice, which to us seems destructive of all good farming, is upon the increase. The Duke of Norfolk, and several other proprietors, much to their honour, act otherwise; and are convinced of the propriety of giving the farmer a security of reaping the fruits of his improvements.

We shall, in another part of this work, endeavour to shew the ruinous consequences to agriculture that proceed from giving no leases; and how absurd it is to expect the ground is to be improved by persons who may be removed from their possessions whenever the proprietor, or, more properly speaking, his steward, is disposed from whim or caprice to do so.

Covenants.—The covenants that prevail betwixt landlord and tenant are many and various. We were favoured with copies of some leases, and had opportunities of seeing others in the hands of the possessors. We shall give an abstract of the clauses in some of them now lying before us.

In one, the covenants are as follows.—The landlord sets the ground for 10 years, and gives entry to the land on the 1st day

of February, and to the houses upon the 12th of May: the rent to be paid in equal portions, at the first terms of Whitsuntide and Martinmas thereafter. Reserves the liberty of hunting and fishing on the premises, and the property of all mines and quarries, and the iron ore, coal, lead, or other minerals contained in them. Reserves liberty to go into the inclosures to cut and dig trees of all kinds, with access to carry them off. The tenant obliges himself to pay all taxes, as well parliamentary, as other ones already imposed, or to be imposed during the currency of the lease, without defalcation from the rent. Obliges himself also to eat all his *hay* and straw upon the premises, and to dung a part of his meadow ground every year. Agrees not to plough any of his old pasture under a penalty of £ 10. per acre, nor to have above one-fourth of his farm under the plough at one time.

The lease also contains a great many clauses, about attending courts, repairing fences, grinding malt and corn, &c. &c. &c. which it is unnecessary to mention.

In another we observe the following conditions.

Restricted from ploughing any of the meadow or pasture land.

Obliged to fallow the third part of the tillage land annually, and to lay two chalders of lime upon every statute acre.

To pay all parliamentary and parochial taxes at present existing, or that may be laid on during the currency of the lease.

To keep up all fences, roads, bridges, &c. upon the farm.

To pay the rent within twenty days after it becomes due, under forfeiture of the lease.

To pay a penalty of £ 10. for every acre not managed agreeable to the covenants, over and above the rent.

Conditions of a third lease.

Entry to the farm at Candlemas.

Rent payable at Whitsuntide and Martinmas thereafter.

No *hay* or straw to be sold.

No meadow or pasture to be ploughed without consent of the proprietor.

When land is sown down for grass, to be done with 12 bushels of fine *hay* seeds and 4 lbs. of Dutch white clover per acre.

Tenant removable at 6 months warning.

In other leases we saw, the tenant is expressly prohibited from breaking up all grass lands that have lain 6 years, which renders the situation of the pasture and meadow fields as immutable as the laws of Media and Persia were of old. In short, the very nature of most of the subsisting covenants are destructive to improvements; and, as it is well said in the Journal by Mr. Potter, at Tadcaster—"A good farmer will manage much better wanting them, and as for a bad farmer, they never will mend him."

Rent.—It is difficult for us to say what may be the real rent of land. We could not, with propriety, push the farmer upon this point, when he was ignorant what use we were to make of his answer; and even where we got sufficient information of what was paid the landlord, we found there was a long train of public burthens, over and above, which were not easily computed. There is, in the first place, the land tax, which is uniformly paid by the tenant, and generally amounts to 1 s. per pound upon the real rent. 2dly. The tithes, which are levied in so many various ways, that it is impossible to say what proportion they bear to the pound rent, much depending upon the actual state of the farm, and not a little upon the character and disposition of the drawer. Upon arable lands, where they are annually valued, the payment in money may be from 5 to 8 s. per acre, in some cases more. 3dly. The roads, the expence of which to the tenant is about £ 7. per cent. upon the rent. 4thly. The poors rates, for which no fixed sum can be set down. The lowest we heard of was 18 d. in the pound; and the highest 6 s. 8 d.; but from the very nature of the tax they are continually fluctuating. 5thly. The church and constables dues, which are about 1 s. in the pound.—From all these things it may be supposed, that in many places the sums payable by the farmer to the church, the public, and the poor, are nearly as great as the nominal rent paid to the landlord. It will appear surprising to many, that rents are higher for grass fields than for those under the plough. This is however actually the case, and we account for it in the following manner. When in grass, few or no tithes

are paid, at least the burthen is comparatively light. The want of leases, and the restrictions do not operate half so severely upon the grazier as upon the corn farmer. The grass farmer has few improvements to make ; he goes on in the same course from year to year ; and the want of a lease, though it keeps him from the certainty of possession, yet does not hurt him so far as to cramp his operations. At Settle and Skipton, we found land let so high as 40s. and 50s. per acre, while, from the best accounts we could receive in the corn country, 20s. and 30s. was considered as a high rent, and in many places it is much lower.

Tithes.—This is a most important subject, which we shall afterwards have occasion to mention. At present it is only necessary to observe, that they are collected in various ways. In some parts, the small tithes are only drawn in kind, and a modus is taken in lieu of the great ones. In other parts, it is the custom for the tithe-owner to send a person before harvest to value the tithes in the parish, and afterwards to deliver an estimate of their value to the farmer, giving him the alternative of paying that sum (which for various reasons is generally agreed to), or having the tithes drawn in kind.

Poors Rates.—This is another burthen upon the farmer, which has of late greatly increased. In a country, such as the West Riding of Yorkshire, where employment abounds for persons of all ages, and even for children who are able to do any thing, it excites great surprise that the poor should be so numerous, and the rates so excessive. The subject is important, and well deserves the attention of those concerned. As for our parts, we do not pretend to understand the laws by which the support of the poor is regulated, nor have we the least knowledge upon what system the workhouses are kept. We have heard of workhouses in Norfolk, and other parts of the kingdom, that, under proper management, have either supported, or nearly supported themselves. We feel very sensibly for the infirmities of old age, and are fully of opinion that due attention ought to be paid to the distresses of our fellow-creatures who are unable to support themselves. This is a Christian duty, and ought never to

be forgotten. But we have reason to suspect the provident support held out by the poors laws, is often the cause of making the lower ranks more thoughtless and extravagant in the days of health and strength than they would otherwise be. Holding out large funds is the sure way to increase the number of the poor. We speak from our personal knowledge, when we say, that in the northern parts of the island, where employment is not only scarce, but wages not half so great, the lower ranks, by being temperate and frugal, well bring up large families, and are very seldom a burthen upon the parish where they reside. We know of country parishes where the number of souls is near 2,000, and the rental of the ground more than £4,000, where the annual charge of the poor does not exceed £50; and of this sum not one half falls upon the land, as it is mostly collected on Sunday at the church doors. In Scotland there is no law against settlements; no restrictions against building cottages wherever a man can procure ground to build upon, nor no bars thrown in the way of common people marrying; and yet the number of poor, who are a burthen upon the parishes, is comparatively small. From these things there are reasons for concluding, that the English poor laws stand much in need of revision; and that the laws against settlements, and building cottages, have not prevented the increase of the poor, but are only detrimental to sound morality and real religion.

Rotation of Crops.—There are many rotations of crops adopted, but the one most generally practised is turnips, barley, clover, wheat. Where the turnips are properly cleaned, a better one cannot be followed, upon all soils fit for this rotation. But this succession of crops also takes place upon much land that cannot be farmed in this manner to advantage. Upon other lands, where only two crops are allowed to a fallow, wheat and beans, or wheat and oats are generally the crops. In the western parts of the Riding, oats is the principal crop, which is indeed very proper, so long as the plough is confined to the higher grounds.

The grasses that are cultivated are red clover, when it is to be

followed with wheat, and white clover and hay seeds for pasture. Sometimes hay seeds are sown by themselves, and a good deal of sainfoine is cultivated in the neighbourhood of Tadcaster and Ferrybridge. As for the old rich pastures about Skipton, Settle, and other places, it is not easy to say, what they have originally been sown with. There appears, among other grasses, a great quantity of what is usually called honeysuckle grass, which we suppose to be the same plant sold under the name of *cow-grass* by the London seedsmen. Most of the vale of Skipton has been 50 years in the same situation as at present; and the proprietors do not seem anxious for changing it. The quantity of hay seeds sown upon an acre is very great; no less than three-quarters. Probably some people may sow less; but we had accounts from some very judicious farmers that the above, when sown with 18lbs. white Dutch clover, afforded them the best pasture. Indeed none of them can say what these hay seeds are; they may be weeds, or other noxious trumpery; this they could not explain.

There is very little rye-grass sown. The people in general have a mortal aversion to it; and the clover crops, from a want of this mixture make exceeding bad hay. The old pastures are therefore frequently cut, which makes a hay of great repute, and is generally used over the whole Riding.

Turnips.—Although the turnip husbandry prevails over a great part of the Riding, yet the proper cultivation of them is not attended to so carefully as it ought. Except by a few individuals, they are universally sown broad-cast, and most imperfectly cleaned. We understand that it is not much more than twenty years since they were hoed at all; and that the introduction of this most necessary practice, was principally owing to the indefatigable exertions of that truly patriotic nobleman the late Marquis of Rockingham. It may readily be supposed that a people, who so lately thought hoeing unnecessary, will still think an imperfect hoeing sufficient, which we are sorry to say is too much the case. Indeed it is only by drilling and horse-hoeing that large fields of turnips can be kept in proper order,

at a moderate expence. We saw some fields very well dressed, and carrying good crops, particularly upon Mr. Beaumont's estate near Wakefield, in the neighbourhood of Rotheram; and at Snaith; but the greater number were full of weeds, in some places too thick, in others very blanky, and would not be considered as half a crop, where the management of turnips is well understood.

Rape, or Cole-seed.—It did not appear to us that rape was much cultivated in any part of the West Riding; and it is only on the eastern parts that any quantity is sown at all. It is raised both for feeding sheep, and upon account of the value of the seed; although we apprehend, in the last case, it will be found a very scourging crop. There are two ways in which it is consumed by sheep; first, by sowing it in July, and feeding it off both before winter, and again in the spring, in which method it is an excellent preparation for barley; secondly, it is sown upon the wheat stubbles that are next season intended for turnips. The land is ploughed as soon as the wheat crop is got off, which is usually before the end of August, and it is eaten in spring, previous to working the turnip land. Both these modes are excellent, and deserve imitation. When rape is intended for seed, it is sown about the 1st of August, upon land fallowed and dunged. It is cut in the month of July thereafter, by which means it remains near a whole year on the ground.

Winter Tares.—Tares are sown in many places, particularly about Sheffield and Rotheram; and are excellent spring food for horses before the clover crops are ready. They are sown from September to the 1st of November, and by being cut in April and May, afford sufficient time to prepare the ground for turnips. As they are found to answer so well, we cannot but recommend the cultivation of them, upon all rich warm soils, the maintenance of horses being at that time particularly expensive.

Flax.—Considerable quantities of flax are raised in that part of the Riding next the river Ouse, which is a very proper soil for it. We were favoured with a list of the claims given in this year to the clerk of the peace for the West Riding, from which it appears, that the bounty allowed by parliament for encouraging

the growth of flax, is claimed for no less a quantity than 59,000 stones. Upon a proper soil, nothing will pay the farmer better than flax; and if care and attention are bestowed on the pulling of it, and due pains afterwards used to the scutching and cleaning, there is no doubt but flax of as good quality may be raised at home, as what is imported from the Baltic, or Holland.

Inclosures.—Almost the whole of the West Riding is inclosed, except the common fields and moors; and too much praise cannot be bestowed upon the perfect state in which the fences are kept. The inclosures are, however, generally too small, at least for corn-fields, and are the means of wasting a great part of the land. It did not appear to us, that either the conveniency of water, or uniformity of soil had been much studied in planning them out. The advantages of inclosing are great and manifold. The rent to the landlord is immediately raised at least one-fourth; and how could this be paid if more corn and grass were not produced than by open field management? They enable the farmer to practise a more improved system, by introducing the grass husbandry in all its perfection; and the improvement of all kinds of stock is necessarily great.

We often asked the question, Does inclosing decrease population? and were uniformly answered, that it certainly increased it. Can it even be supposed, that a practice which enables the farmer to pay more to his landlord, which is the means of increasing food both for man and beast, will ever lessen the number of the people. It affords employment for additional hands, from the great increase of labour necessarily required by this improved system, which must consequently tend to augment population. These things are so obvious to every person acquainted with the subject, or who will take the trouble to examine the present state of the common fields and wastes, that we would hardly have mentioned them, if some popular writers, particularly the late Dr. Price, had not attempted to shew that the number of the people in this island was decreased, and assigned inclosing as the principal cause:

Farm Houses, and Offices.—The greatest part of these are

very inconveniently situated, being generally crowded into townships or villages, and not upon the fields the farmer has to cultivate. It is sufficiently plain, that the nearer the farmer is to his fields, the more work he will perform, and at less expence.

This has lately been more attended to than formerly, but great room is still left for further improvement in this respect. As nothing tends more to promote the happiness and comfort of the farmer than by having his farmstead properly constructed, and conveniently situated, we shall here take the liberty to throw out our opinion on the subject.

The farm house and offices should be placed, as near as possible, in the centre of the farm, provided good water can be had in plenty, which always ought to be first inquired after. The farm-yard, or fold-yard, should be a long square, proportioned to the size of the farm, and the number of buildings intended to be erected. The dwelling house should stand at one of the ends of the yard, fronting the south; the barns upon the west side; the stables and byres upon the east; and sheds, &c. on the north side, for holding husbandry utensils. This affords complete conveniences of all kinds; and keeps every thing within the reach and sight of the farmer, which is an object of great importance; and the yard, by being inclosed on all sides, keeps the dung in a proper state for fermenting, and affords shelter to whatever cattle may be wintered there.

We do not admire the large barns we saw at several places, particularly those of Messrs. Walkers, at Rotheram, and Mr. Drummond, at Baubey, which are liker churches than barns. The building such edifices at first is very expensive; and the interest of the money originally laid out, when added to the sums required for keeping them in repair, must be great; while at the same time, they are productive of no real good to the farmer.

We are clearly of opinion, that corn can never be kept so well in a house, as when properly built and stacked in a yard. It will always be found healthier and drier in that case, than when kept long in the house, which it must necessarily be, wherever large barns are used: besides, in backward seasons, corn can be

got much sooner ready for the stack than the barn ; and it is an important article in the economy of farming, to have corn as soon out of danger as possible.

It is said, housing of corn saves expence : this we doubt. It will take as many people to put it into the barn, in harvest, as afterwards ; and the difference of expence betwixt harvest and common wages, will build it in the yard. At any rate, the expence of the barns, and the danger of the corn turning mouldy in them, far more than exceeds every possible advantage, that can be derived from this practice.

We do not think corn, in the yard, can be built more easy and convenient than in round stacks. These may be made of any size, and from their shape and construction, they allow air to penetrate into the heart with greater facility, than when built in the present form. We thought much unnecessary trouble was bestowed upon heading and covering both hay and corn stacks, over the whole Riding. The straw is laid on in very great quantities, and with as much accuracy, as if it were thatched for a dwelling house. As for the roping, it is as strongly applied, as if the stacks were to stand twenty years. We are far from condemning these practices, merely because they are accurate ; corn ought always to be properly secured ; but we think them a wasting of labour and expence, and that the corn would be as well defended from the weather, if half the trouble was saved.

Cottages.—There is a very great want of dwelling houses for husbandmen and labourers ; and this deficiency may be traced to the poor laws for its source. The farmer, from a dread of heavier rates falling upon him, keeps as few houses as possible ; and hence, almost the whole of farm servants are young, unmarried men, who have board in the house ; while those that are styled day-labourers, reside in the villages. This practice is very troublesome to the farmer : it decreases the number of people employed in husbandry ; and has, for its certain attendant, a great rise of wages.

We venture to recommend, that proper houses should be built for farm servants, contiguous to every homestead. This will

not only promote the welfare and happiness of that class of men, by giving them an opportunity of settling in life, which is not at present an easy matter, but will also be highly beneficial to the farmer himself, as he will at all times have hands within his own bounds, for carrying on his labour; and have them of that description, that are generally esteemed most regular and careful.

Wages.—This is an important article to every corn farmer in the West Riding, as wages, for these some years past, have greatly increased. We suppose the wages of a house servant (of which kind, as already said, most of the ploughmen are) may be estimated from £. 25 to £. 30 a year, including maintenance. There is a practice which prevails over a considerable part of this district, of giving them drink both forenoon and afternoon, be the work what it will; which is a ridiculous custom, and ought to be abolished without loss of time. What can be more absurd, than to see a ploughman stopping his horses half an hour, in a cold winter day, to drink ale? We suspect the practice is so deep rooted, that it will not be easily removed without a compensation. This ought to be done at once, as being, like the tythes, an encouragement to idleness; and, from wasting much time, a great obstruction to improvements.

Provisions—are abundant over the whole Riding, though from the extensive demand from the manufacturing towns, they are high in price. Butcher's meat, upon an average, is about 4 d. per pound, but often more during the spring, and early summer months. The corn markets are full as high as in any part of the island; there not being any thing like a sufficient quantity raised within the Riding for the consumption of its inhabitants. In the grazing parts, where very little corn is grown, they are supplied from places at a distance, which no doubt causes a considerable increase in the price. Potatoes are in abundance, though very inferior in quality. The cheapest articles of provisions, are poultry. For which, reasons might be easily assigned.

Fuel.—This most necessary article is plenty, and comparatively cheap. In those parts, where any scarcity exists, they can

be supplied without any material inconvenience, by means of those numerous navigable rivers and canals that intersect the whole country.

Woods.—There is a great deal of oak and ash wood grown in the West Riding, which meets with a ready market at the shipping and manufacturing towns. The woods appear to be under a very proper system of management, which will be seen from a paper relative to them in the Appendix. There are also large quantities of logs and deals imported from the Baltic, which at a future period, might be rendered unnecessary, if Scotch firs, and larches, were planted upon the waste grounds.

Manures.—This is a subject, that deserves particular attention, as it is upon the solid foundation of manuring, that every good system of husbandry must be built.

The manures used in the West Riding, besides those generally used in other parts of the kingdom, are, bones, horn shavings, and rape dust; and from the accounts we received, their effects are highly beneficial. With regard to the lime husbandry and the collection, and application of home made dung, we are of opinion that the present practice is very faulty, and defective. As this is an important subject, we will give our opinion upon it at some length.

1st. In the pasture parts of the country, the hay is consumed upon the field, and from its being thrown indiscriminately upon the ground, the dung may be said to be in great measure lost, at least the value of it is much reduced in comparison to what it would be, if the hay was eaten at home in the house, or the yard; and the dung carefully collected together in a heap, so as fermentation might properly take place. We decidedly condemn the eating hay in the field, as occasioning great waste of that necessary article, independant of the loss sustained by the improper application of the dung.

2dly. The home made dung, in the above parts of the country, is generally laid upon the rich pasture fields, which have been cut that season for hay, and not upon the tillage lands. We have doubts, whether dung can ever be applied with equal propriety,

as upon well wrought fallows. If the dung exceeds the quantity necessary for the fallows, which in few situations will be the case, it ought to be laid upon other parts of the farm, which are under the plough, and not upon the grass fields, which when properly laid down, will sufficiently improve themselves. These observations apply to those parts of the Riding, that are first described in the introductory sketch to this result.

In the corn districts, dung is applied with more judgment, it being generally laid upon the fallow or turnip brick or break, though even there it is sometimes laid upon the grass. We are of opinion, a great deal more dung might be accumulated, if the stubbles were cut lower, than is presently done. Barley and oats are generally cut with the scythe, which so far obviates this argument; but wheat, which is the prevailing crop, is always cut with the sickle.

From not seeing the crops upon the ground we cannot say to a certainty, what proportion of the stubbles might be left. But from a careful examination of the stubbles we suppose it at least one-third. This not only occasions a great loss of grain, as all the straggling heads are thereby left, but also deprives the farmer of a large portion of home manure,* as the dry stubble, left upon

* Some time ago, an experiment was made in East Lothian to ascertain the difference between high and low cutting. Four ridges of wheat were cut, which were of equal length and breadth, and apparently the same in quality. Two of them were cut close by the ground, and the other two considerably higher, though not so high as in many places of the West Riding. The measure of each two ridges was a very trifling more than a quarter of a Scotch acre, which is one-fifth more than the English statute measure. The low cutting was done by 8 shearers in 1 hour 24 minutes; the high cutting in 48 minutes by the same hands. The wheat was threshed separately, and the corn and straw measured and carefully weighed.

Result.—8 shearers, 1 hour 24 minutes, at 18d. per day.

(being the rate of wages that week) and 6 d. for victuals, is	£.	s.	d.
2 s. per day	-	-	0 2 4

The high cutting by the same hands, 48 minutes, at ditto or

4 s. per Scots acre.	-	-	0	1	4
----------------------	---	---	---	---	---

Difference of expence

the field, will never ferment, it is therefore of no use to enrich the ground, and occasions great inconvenience, when the land is ploughed down.

The farmer is also often deprived of a due quantity of dung, by keeping too many cattle. We venture to lay it down as a rule, that no greater number should be kept, than is necessary to reduce the straw to putrefaction. When more are kept, although the quality of the dung may be improved, yet the quantity is curtailed.

The lime husbandry seems to us to be practiced upon very improper principles. Whenever we speak against the general practice, we wish to be diffident; but we are so much dissatisfied with the manner in which lime is applied, that we cannot refrain from expressing our sentiments upon it.

The farmer is too often obliged, by the covenants subsisting between him and his landlord, to throw lime upon land, where, in the real sense of the word, it is truly thrown away. It must appear exceedingly absurd to any person, who knows the manner in which lime operates, and the number of years its effects continue, that the farmer should be obliged to lime his land every third year, whether it needs it or not. This is in effect done by every lease, where two crops are only allowed to a fallow, and where it is covenanted to lay lime upon that fallow. The specified quantity is in many cases so small, being sometimes one chalders, or a chalders and a half, that it never can produce effects adequate to the expence, or indeed any expence at all. It may be said, that by frequently laying on small quantities, that a sufficient dose is given at last. This argument is plausible, but it

One and one-quarter pecks more wheat upon the two ridges			
low cut, than upon those cut high, at 1 s. 4 d. per peck, is	0	1	8
14 Stones (of 22 English pounds) more straw, at 2 d. per stone	0	2	4
	0	4	0
From which deduct the difference of expence in cutting	0	1	0
	0	3	0
Benefit derived from cutting low, being 3 s. the quarter of an acre, or 12 s. per acre.			

should be remembered, that the effects of the first partial liming, is probably wore off, before the second comes to its assistance; and that if the first is stimulating and fermenting the land, the second is only a prodigal waste of expence.

But why oblige the farmer to lay lime upon his land at all? If it be for his interest, he will do it without any obligatory clause in his lease; if it is not for his interest, a burden is laid on his shoulders, that can give benefit to none. It is surprising, proprietors should insist upon this; for lime has never been understood to improve the *real* value of the soil, but is generally considered as a stimulus, or used to procure a temporary exertion.

We were particularly anxious to ascertain the quantity of lime laid upon an acre, and we found it to be, in different places, from 1 chalden, or 32 bushels, to 100 bushels. Some people may use rather more, but from 60 to 70 bushels per acre, may be regarded as an average; a quantity very inadequate, in our humble opinion, to the intended purpose.

Lime, in the West Riding, is principally applied to fallow, and spread upon the ground immediately before the last ploughing. We judge, unless in some particular situations, it would be used with greater advantage upon the grass fields. For instance, instead of laying it upon the fallow, preparatory to turnips, or upon the clean summer fallow, let it be laid upon the clover crop, which is the third of the usual sequence; or, upon the pasture lands, previous to breaking them up for corn. The land is generally at that time in a situation proper for the operation of lime, and it can be applied at different periods, with less trouble and inconvenience to the farmer.

Watering or floating land.—In many parts, especially in the manufacturing district, great improvement is made upon the grass fields, by watering or floating them. Mr. Walker, at Crownest, is the most particular in this respect, and has his water so admirably disposed, that he can float the greatest part of his fields, whenever he thinks convenient. We do not pretend to be acquainted with this branch of husbandry; but in some places, we were told, its advantages were equal to a top dressing of manure.

Draining.—This most useful practice ought never to be neglected by the farmer; as where the nature of the soil, and situation of the ground requires it, no money can be so advantageously expended. In our survey of the West Riding, we found draining was assiduously attended to, in many places; but that in others, it was either totally neglected, or imperfectly performed: in particular, that useful measure of clearing out the water furrows, upon the tillage fields, which is absolutely necessary upon most soils, was very negligently executed. As soon as possible after a field is either ploughed or sown, the whole furrow along the end of the field, betwixt and the headridge, together with such parts of the field itself, where the water, from want of level, cannot get off, should be digged of a proper depth, and perfectly cleaned out. This lays the field in such a situation, that the greatest falls of rain run off immediately; and a due attention to this practice, constitutes, in a material manner, the difference betwixt the good and the bad farmer.

Hollow drains are filled up in various ways. In some places the shoulder drain prevails. This is done by digging the bottom of the drain narrower than the top, and covering it with the surface sod, which may do in some cases where the sward is strong, but never can be fully depended upon. Where they are filled with stones, sometimes the largest are set upon their edge casting inwards, till they join, which leaves a small vacuity for the water running, and they are then filled up with small stones. In other places this is done with bricks; but where plenty of materials allow it, we never could discern a more efficacious method of filling drains, than by doing it with round land stones thrown in indiscriminately, which, if care is taken that no earth is mixed amongst them, and the top well covered with straw before they are filled up, will run longer, and be less liable to interruption than when a vacuity is left by either setting the first stones upon their edge, or by walling the sides, and covering with flat stones, and at the same time is considerably cheaper.

Paring and Burning.—Our information on this head, was various and contradictory. In some places, the practice is pro-

hibited, unless with the consent of the proprietor. In others, it is deemed the best method for breaking up all grass grounds, and is not supposed to waste the soil in any shape. Our opinion is, that upon some grounds, paring and burning may be good management, particularly upon rough coarse sward, which cannot otherwise be easily brought into a proper state of cultivation. But that upon the whole, it is a practice that should be gently used, as it tends in a material degree to exhaust and impoverish the soil. The expence of paring and burning of land with spreading the ashes, is from 18 s. to 24 s. per acre.

Horses.—There are not many horses bred, except in the eastern parts of the Riding. The size of those employed in the western parts, is generally small ; but they are hardy, and capable of great fatigue. In other parts of the Riding, they are large, and sufficiently able for any field operations. Those used in the waggons are strong and well made.

Cattle.—The stock of cattle may be classed under four different heads. There is the short horned kind, which principally prevail in the east side of the Riding, and are distinguished by the names of the Durham, Holderness, or Dutch breeds. There is the long horned or Craven breed, which are both bred and fed in the western parts, and also brought from the neighbouring county of Lancashire. These are a hardy sort of cattle, and constitutionally disposed to undergo the vicissitudes of a wet and precarious climate. There is another breed which appears to be a cross from the two already mentioned, and which we esteem the best of all. A great number of milk cows of this sort are kept in Nidderdale and the adjacent country, which are both useful and handsome. They are perhaps not altogether such good milkers, as the Holderness cows, but they are much hardier, and easier maintained. They are, at the same time, sooner made ready for the butcher, and are generally in good order and condition, even when milked. Beside these, there are immense numbers of Scotch cattle brought into the country, which after being fed for one year, and sometimes two, are sold to the butcher. Beef of this kind always sells higher in the market, than that of

the native breed ; and from the extent of population, there is a constant demand for all that can be fed.

Sheep.—There are so many kinds of sheep, both bred and fed, and they have been so often crossed, that it is not easy to describe them. The sheep bred upon the moors in the western part of the Riding, and which, we presume, are the native breed, are horned, light in the fore quarter, and well made for exploring a hilly country, where there is little to feed them, but heath and ling ; these are generally called the Peniston breed, from the name of the market town, where they are sold. When fat they will weigh from 14 lb. to 15 lb. per quarter. They are a hardy kind of sheep, and good thrivers. When brought down, at a proper age, to the pastures in the low parts of the country, they feed as cleverly, and are as rich mutton as need be. We suppose crossing ewes of this sort with a Bakewell ram, would produce an excellent breed for the low country pastures, as the Bakewell kind have exactly the properties, that the Peniston wants.

There are great quantities of Scotch sheep from Teviotdale, &c. fed in the country ; numbers of ewes are also brought annually from Northumberland, which, after taking their lambs, are fed that season for the butcher. Many two years old of this kind are also fed upon turnips ; and in the southern parts there are a good many of the flat ribbed, Lincolnshire sheep, which are ugly beyond description.

Upon the waste commons, scattered up and down the Riding, the kind of sheep bred, are the most miserable that can be imagined. As they generally belong to poor people, and are mostly in small lots, they never can be improved. This will apply to the whole of the sheep kept upon the commons, that are not stinted ; the numbers that are put on beggar and starve the whole stock. In many parts of the Riding, a superior attention is now beginning to be paid to this useful animal, by selecting rams of the best properties, and breeds ; which, it is to be hoped, will be more and more attended to.

Wool.—From the extent of the woollen manufactory in the Riding, it may be necessarily supposed, there is a constant de-

mand for wool of all sorts. Prices, however, owing to the stagnation of trade, have decreased considerably this season. From the best information we could procure, it has fallen from 15 to 25 per cent.; and good wool may now be purchased at 7 *d.* and 8 *d.* per pound averdupois weight.

Common Fields.—The system under which that part of the Riding, composed of common fields, is managed, cries out for immediate improvement. It has been already said, in the introductory sketch, that these fields are numerous and extensive; and that the husbandry practised upon them is uniformly bad. Hence land rises in value the moment it is divided, and free scope allowed to the genius and talents of the farmer. They are generally of the best soil, and yet from what we learned, they carried the worst crops. Every hour lost in accomplishing a division of them, brings a loss upon the public greater than can be estimated.

Waste Lands.—A considerable part of the West Riding is waste land and moor. It may appear rash to guess at the proportion, but we think it may be computed at one-sixth part of the whole. The quantity is lessening every day, as inclosure bills are frequently passed for that purpose; but still a great deal remains to be done. There are many parts of these wastes capable of great improvement, if divided and inclosed. But the far greatest part would not repay the expence of inclosing; at same time it is our opinion, that larches and Scots firs would thrive in many situations. Wood of these kinds is much wanted, and we apprehend, would pay the proprietor well, and contribute to the public convenience. At any rate, as the wastes are mostly common, the proportion belonging to each proprietor ought to be ascertained, which would enable him to improve his share in the manner he may see most advantageous.

Ploughs and Carts.—In nothing are the farmers of the West Riding more deficient, than in the construction and management of their ploughs and wheel carriages. These are essential articles in the practice of husbandry, and are generally most perfect where the best farming prevails.

The same plough, with a few trifling alterations, is universally used over the whole district: it is generally called the Dutch, or Rotheram plough; and was first made by a Mr. Joseph Foljambe, about 70 years ago, who got a patent for it. The fault of this plough lies more in the manner it is yoked, than in the principles upon which it is made. The practice of yoking horses in a line, which prevails over a considerable part of the district, renders it necessary, when putting in the beam, to turn it considerably to the furrow, in order to give the plough what is technically called *land*. Owing to this, the horses draw in a contrary direction to the share and coulter, which consequently makes the plough go very unsteady; and from the difference betwixt the direction of the draught, and the head upon which the share is fixed, the force of the resistance must necessarily be increased.

Notwithstanding the necessity of turning the beam towards the furrow is entirely owing to the yoking horses in a line, yet so forcible is custom, that even when horses draw abreast, the ploughs have all, more or less, of this crooked beam. We observed that the sock or share is much shorter and broader in the point than those we are accustomed with, which must make them difficult to work in all gravelly soils, and even in clays, when they are dry.

The half of the mould board is of cast metal; the upper half is wood, which is very proper, as it is only the under side that wastes with the work.

The prevailing practice over more than one half of the district, of yoking horses in a line, is truly absurd. A horse never works so easy, nor draws so fair, as when going abreast, or in pairs. If land is in that situation, as not to bear a horse upon the unploughed part, it is unfit for labouring, and ought not to be touched. But this cannot be sustained as a reason for this practice, for we repeatedly saw three horses in a line, sometimes four, ploughing tender clover leys. Every person knows the power of old customs and prejudices, and we can only assign this for such an absurd practice.

We apprehend every part of plough work may be accomplished by two horses, if they are of sufficient strength, and properly maintained. We speak from what we see daily done on our own farms, and those of our neighbours; where land, fully as strong as any we saw in Yorkshire, is constantly ploughed with two horses, and the furrow generally taken deeper. There is no question, but where the land is hard and stiff, so much cannot be done in a given time, as upon lighter soils. But this argument will have the same weight, whatever number of horses are yoked. All we contend for is, that two good horses yoked abreast in a plough, properly constructed, are able to labour any ground, when it is in a proper situation for being wrought.

It is proper to notice, that owing, as we suppose, to ploughing in a line, the work is often very badly performed. There is scarcely a straight ridge to be seen, except in a very few places. The land is generally kept too flat; nor being properly acclimated to defend it against the winter rains; we observed this particularly betwixt Thorn and Snaith, where, notwithstanding the soil is upon a wet bottom, yet the ridges are narrow, and not raised at all. At the same time the land near these places, was full straighter, and neater ploughed, than any we had seen.

We often remarked in the course of our survey, that the land was in general ploughed too shallow, which not only curtails the pasture of the plants, but also exposes them to be hurt by drought in one season, and drenched by moisture in another. We would lay it down as a rule, never to be departed from, that all land ought to be ploughed in direct proportion to its depth, and that where the soil will admit, it ought to be done substantially.

Farm Carriages.—These are carts and waggons of various sizes. The carts, in general, are badly proportioned, being too long in the body, and straight; which makes them heavy upon the back of the horse in going down hill, and the contrary extreme in going up. They are difficult to unload when driving out dung, or performing any home work, and often the sides fold inward, in place of casting out to the wheel, which makes them

hold much less than they would otherwise do. They are drawn by two, three, and four horses, and are very unhandy about a farm. The waggons are both upon broad and narrow wheels; they are destructive to the roads, and, in our opinion, of no advantage in carrying on the work of the husbandman.

We suppose, that a cart much shorter, and at same time broader, with sides throwing out, and of a size to be drawn by two horses, is a much better machine for the farmer than the one presently used. If a person will attentively consider the unequal manner in which horses do work, they will soon be convinced of the impropriety of yoking too many together. We think, the lighter the cart, and the fewer the horses, the more will proportionally be drawn; at same time, a great saving is afforded in the important articles of *tear* and *wear*.

Oxen.—Very few oxen are wrought in the West Riding; and these only upon the farms of landed proprietors. We know working of oxen is a popular topic; but, from what we could learn upon this subject, the practice is not likely to become general. From their being almost universally given up, in those places where they were formerly in repute, a suspicion arises that working them is not attended with profit. Those who object to the use of oxen say, that there is nothing saved, but the original cost of the ox; which, from the difference between the value of their labour and that of a horse, is soon compensated. At same time, it is a business of infinite difficulty, to get persons to work them. This is a point, however, that cannot be decisively determined without much investigation and inquiry; particularly in those parts of the kingdom where the practice is still continued.

Roads.—The utility of good roads, is at first sight so evident, that we need hardly say this subject deserves particular attention. In the West Riding, there are a great number of very good roads, and likewise a number that are indifferent. From what we could learn, they are generally under good management, and the funds well applied. In many places of the district, particularly near the manufacturing towns, materials are bad. To

this circumstance, more than any impropriety of management, we attribute their insufficiency. At same time, the ingenuity of the surveyors was conspicuous, in burning free stones, and brick, to supply the want of harder materials.

As these burnt materials make at the best but a very imperfect covering, and need to be frequently repeated, it occurs to us, that hard stones might be brought, by water carriage, from the more eastern parts of the district. This might probably be expensive at first, but we are convinced, would be found cheapest at the long run. From Halifax to Wakefield, the road is in the most miserable situation; and if it was so when we travelled it, in the end of October, it must be nearly impassable during the winter months. This is a very public road, and no expence ought to be spared, to render it good and sufficient.

We apprehend, the weight of the numerous waggons that pass over this, and other roads in the manufacturing part of the country, must always render them bad, so long as they are repaired with soft-materials. We saw some roads, that had been newly covered with burnt stones and bricks, crushed down at once by the weight of these carriages: let us suppose rain to fall, and remain in the track or rut so made; another waggon comes, and cuts down still further; and a third puts them in as bad condition as before they were repaired. By these waggons, an endless expence is created to the public, and still bad roads are the consequence.

There was nothing gave us greater satisfaction, than the paved foot paths upon the sides of most of the roads in the manufacturing part of the country. This shews an attention to the comfort of foot passengers that is very laudable. We have noticed in the Journal, these foot paths are also made "bridle roads;" a practice which can only be excused by the peculiar badness of the main road.

The roads are a very heavy article of expence to the farmer; and here, as well as in most other parts of the island, the burden is chiefly laid upon the occupiers of land. It cannot be properly called a part of the rent; as if the work is rightly laid out, full

value is received from it: the farmer travels the road with more ease and convenience to himself; and is enabled, from the improvement made by his labour, and money, to carry more corn to market, and to return with a heavier load of dung, than he could do if the roads were in their natural state. Road expence, therefore, cannot be viewed in the same light as tithes and poors rates; for these can, in no sense of the word, be considered as paid for value received.

It has often appeared surprising to us, how the support of the by roads should be thrown upon the possessors of land; and persons of almost every other rank allowed the benefit of them, free of all charge whatever. In many cases, those who pay least for the making good roads, have the greatest share of the profit. The turnpike laws are not founded upon such false principles, but every person by them, is obliged to contribute his share of the expence for supporting the roads, in a direct proportion to the use and benefit he receives from them.

The statute labour paid by the farmer for the support of the roads, is six days labour of a team with three horses, or four oxen and one horse, and two able servants, for every £ 50. of rent, or less or more proportionally, together with an assessment in money of 6d. per pound upon the rent, or higher if the justices see necessary. Statute labour is also paid by the inhabitants and occupiers of tenements, woods, tithes, and hereditaments. The surveyors are nominated annually, upon the 22d September, at a meeting of the inhabitants of each parish or township, who make up a list, not exceeding ten persons, whom they think fit for that office; which is given in to the justices, who appoint one or more out of the list, as they see necessary. The surveyor or surveyors collect the assessment, see the work properly executed; and when their time in office is expired, they lay their accounts before another meeting of inhabitants, and afterwards before a justice of the peace, who may pass, or postpone them to the special sessions, to whom every person who thinks himself aggrieved may appeal.

This mode of managing the roads appears more eligible and proper than what is practised in many other parts of the island.

In making up the list of surveyors, the inhabitants place the person they wish appointed first, and the justices generally appoint accordingly. If the surveyor is deficient in his duty, he is fined in a sum not exceeding £ 5. nor less than £ 2. for every neglect; and as he must produce his accounts at a vestry meeting, he can hardly escape if culpable. The auditing the accounts annually is a very proper step, and prevents that disorder and confusion, which has been well known to have taken place in some other counties.

Manufactures.—It is unnecessary to speak here of manufactures, further than as they are connected with agriculture. It will appear from many passages in the Journal, that they are of material advantage towards promoting good husbandry, and that to them the West Riding is indebted for its present flourishing state. A considerable portion of the land is occupied by persons whose chief dependance is upon manufactures. We are not, in this case, to expect the same attention to the minutiae of farming, as from those who make it their sole occupation. Their minds and capitals are generally fixed upon their own business, and land is solely farmed by them as a mere matter of convenience or amusement. In the vicinity of the manufacturing towns, great numbers of milk cows are fed, and there is a constant demand, not only in those places, but over the whole Riding, for milk, and the articles of cheese and butter, which are produced from it.

Agricultural Societies.—In our progress through the West Riding, we could not learn, after the minutest inquiry, that a single society subsisted for the improvement of agriculture. We heard of three that were formerly established for that useful purpose, viz. at Sheffield, Bautry, and Doncaster, but these for some time past have been discontinued.

As improvements in agriculture very often locally take place, and are slow in travelling from one part of a country to another, we should esteem the institution of societies upon proper principles, an excellent method for disseminating knowledge in this science; if these societies were to correspond with one another,

every new improvement, either in cultivation, stock, or husbandry utensils that was devised in one part of the country, would be immediately known in its most distant parts. For want of these means of communication at present, the great body of farmers are almost as ignorant of what their brethren in other counties are doing, as if they lived in a foreign land.

In constituting agricultural societies, we are far from recommending an intermixture of proprietors and farmers together. It is absolutely necessary, for many obvious reasons, they should be separate. Without dwelling upon these, it may only be said, that in presence of his landlord the farmer is too ready to be diffident, and will not propose his opinions in that free and unrestrained manner he would do, if only amongst the company of his brethren and equals. We heard of the Sheffield society, where gentlemen, clergy, and farmers, met promiscuously; the consequence of which was, that the latter were in a manner prohibited from mentioning improvements, in case they should be a watch-word for the one increasing the rent, and the other raising the rate of tithes.

II. OBSTACLES TO IMPROVEMENT.

Having given a comprehensive view of the present state of husbandry in the West Riding, we shall now proceed to point out the obstacles that, in our humble opinion, stand in the way of its further improvement. These we consider to be, want of leases; injurious and improper covenants betwixt landlord and tenant; payment of tithes in kind, or by annual valuation; and the smallness of farms. Many other causes of less consequence might be pointed out, but these are the great and leading obstacles, and it is unnecessary to pick at pebbles, while mountains are in the way.

Want of Leases.—That celebrated agricultural writer, Arthur Young, in his Political Arithmetic, published twenty

years ago, has said that, "the improvements which have taken place in England, have been almost owing to the custom of granting leases, and that in those countries where it is unusual to grant them, agriculture continues much inferior to what it is to be found where they are usual." If this doctrine be admitted, (and in our opinion it is founded upon principles that cannot be disputed,) the general custom of not granting leases in the district we are now treating of, must deserve reprehension, and if we are to judge of its husbandry by the rule here laid down, we would be under the necessity of declaring, that however flourishing the country may be, and however much it may be improved in every branch of its agriculture, still if leases had been granted, and a security thereby offered to the farmer for enjoying the fruits of his labour, these improvements would have increased; and consequently the interest not only of the public, but also of the proprietors themselves, would have been materially promoted. This is an important subject, and well deserves the attention of every landed gentleman in the kingdom.

Before a farm can be put in proper order, a considerable time must elapse, and much money must be expended. The fruits of improvements are not gained all at once, and a number of years are required to accomplish the best digested plan. Suppose, for instance, a person entering to a farm that was worn out and exhausted by long and successive tillage, and that he wishes to refresh the land by laying it down to grass; it will be six years at least before he can go over it all with fallow, and unless he sow it down clean, he is neither doing the land nor himself justice. If he continues it in grass five or six years more, which is little enough time for ground so exhausted, it will be found that near twenty years must take place before he receive the reward for his improved cultivation; and to receive this reward he has a claim both from his superior management, and as an incitement to his future industry: but what security has he for this reward, or what incentive has he to industry, if he sits upon the premises by virtue of an annual lease. In the midst of his career he might be interrupted by a *six months warning*, and the toil of his hands, and the

fruits of his improvements, go to another. These are not imaginary apprehensions, but arguments founded upon real and solid principles; and which will operate less or more upon every farmer, according to his situation and circumstances.

Again, we shall suppose a farmer wishing to improve his breed of sheep; the first step he has to take is to hire, or purchase rams at an extravagant rate, or otherwise he will not get them at all. If he is removable upon six months warning, sentence may be pronouncing against him, when his ewes are but lambing, and all his schemes of improvement blasted at once; as a reflection upon his precarious settlement would probably make the former farmer continue in the usual routine of cropping his exhausted fields, and taking what he could find in the old beaten path; so similar considerations would probably influence the other to refrain from improving his flock in such a manner as he would otherwise do; which is not only detrimental to his interest as an individual, but a great loss to the public at large.

From these things we hope it will appear, that before any real and solid improvements can ever be effected by the farmer, he must have the security of a lease, for affording him time to reap the fruits of these improvements. There is, in the course of farming, as much often laid out upon a single acre of ground, as many succeeding crops can repay; in this case, where the farmer has a lease, he looks to a future period for being reimbursed: if he has none, can it ever be expected that any man of common sense will throw away his money by improving another person's estate, and cast himself upon the mercy and discretion of his landlord for time and opportunity to gain it back again? The farmer who would do this, is not guided by the same principles that influence the rest of mankind.

The higher a farm is improved, the greater the quantity of manure laid upon it, the cleaner the fields are, the richer the pastures and meadows, the completer the fences, and the more convenient the buildings and offices, are all circumstances that may operate against the farmer who has no lease, and be the means of alluring a covetous neighbour to attempt wresting his

possession from him, or may be used as arguments by a designing steward for raising his rent. Such being the case, every considerate man is deterred from expending a halfpenny more than he is necessarily obliged to do; and therefore it follows, that the withholding leases is a real and certain obstacle in the way of farther improvements.

We might also mention arguments of another kind, for granting leases, which, however contemptuously they may be considered by others, have great weight with us. The farmer who sits without a lease, has scarcely the privilege of thinking and acting for himself; * it is needless to bring forward arguments in support of this proposition, for it cannot be contradicted. We have often heard it said, that the liberty enjoyed by the farmer, and the security afforded by the constitution to his property, were the principal causes why agriculture flourished more in this island than in other nations. We beg leave to inquire, where is the liberty enjoyed by the farmer who sits without a lease? his words and actions are under the most absolute subjection to another, who carries along with him a never failing argument upon all occasions. Let the abject situation of such a man, placed under a capricious landlord, be considered, his best actions may be misinterpreted; he is exposed to every indignity without daring to complain: or if the spirit of a man gets up in him, what security does the constitution afford to his situation? † If he has made improvements, the fruits of them are

* We were informed the tenants on an estate in the northern part of England had got warnings of removal, merely because *they had turned methodists*. There are not many landlords that find fault with their tenants for being religious. This instance is only given to shew upon what trivial grounds removals are made.

† The custom of the country in allowing what is called tillage, and half tillage to the out-going farmer, is no reimbursement for any improvement he may have made. The time of entry is at Candlemas, and the in-coming tenant enters to the wheat that is sown, and to the labour done upon the farm by his predecessor, the former of which must be carefully improved and attended to, while every possible advantage is taken of the latter; for these things, as well as the manure laid on, and the grass seeds sown the preced-

wrested from him by an arbitrary removal. Another farm cannot always be got, and he may be turned upon the wide world without the hopes of redress. A prudent man will reflect upon these things, and if he is so critically situated, will often rather part with his natural rights than expose himself to misery: he may have a numerous family; his farm may be doing well with him; he may have contracted an affection for his *natalis solum*, and be uncertain, if he makes a change, how he is next to be put up. The picture may be still higher coloured; but from the above, we contend that the want of a lease precludes the farmer from acting as a free agent, and renders his property insecure and precarious.

Covenants or Restrictions.—That covenants in a lease are obstacles to improvements cannot be disputed, for the very nature of a covenant supposes that the practice to be regulated by it had arrived at its *ne plus ultra*, and could not be mended. These covenants subsist more or less in every lease we heard of: and the shorter the lease, the more numerous they are. In annual leases there appears an absolute necessity for them; as the farmer, from having no certain prospect of enjoying his possession, would otherwise be tempted to disregard every branch of good husbandry.

It will hardly be alleged, in defence of this practice, that agriculture has already arrived at its utmost pitch of perfection, and that improvements in that art can be carried no farther. We will not suppose that any person acquainted with the subject will offer such defences. The very appointment of the Honourable Board, for whose consideration this is drawn up, is a public testimony that the practice of husbandry may still be improved. But how is this to be done if the farmer, who is the first wheel of the agricultural machine, be restricted in his management? If the crops he is to sow be marked out by the drawer of his lease,

ing year, he is allowed. This practice is rather against the out-going tenant, as he receives no more than he actually expended, and another person reaps what he had sowed. His time, personal industry, and all other improvements, go for nothing.

how is more approved rotations to be introduced? The fact is, that all good farming is local, and must in a great measure be regulated by the soil and the weather. It is therefore absurd to lay down in a lease particular rules for a number of years practice; as from circumstances many fields are often both richer and cleaner after carrying 5 or 6 crops, than others after two; consequently, without leaving every thing to the wisdom and judgment of the farmer, the ground can never be properly cultivated, nor made to produce its greatest value.

Restrictions in a lease necessarily suppose that the framer of them possessed more knowledge of farming than he whose operations are thus to be directed. We leave the public to judge whether this can actually be the case or not. Leases are often copied from one generation to another, without paying any attention to more recent improvements. How is it possible for an attorney or his clerk to lay down rules for the farmer's direction? Allowing it is the steward, or even the proprietor himself, that dictates these rules, we are warranted to say it is naturally impossible they can be wisely and judiciously framed. Laying aside the consideration of their fettering the farmer's mind and clogging his operations, such restrictions or rules may, from alteration in markets, be unprofitable; and from the vicissitudes of seasons, improper to be executed.

Every farmer knows from experience that the proper manner of cultivating any land is only to be learned from an intimate acquaintance with the nature of its soil, and that what is very good management upon one farm, is often very bad upon another. The covenants suppose all to be alike, that grass is of equal benefit on all lands, and that the same quantity of lime should be administered to a light loam as to a strong clay. Besides, in framing these covenants, it is taken for granted that a person from a cursory view, is at once able to determine upon the best mode of management for the endurance of a whole lease; or, in other words, that his judgment is equal to that of the whole tenantry of an estate. In short, covenants are inimical to all good husbandry. They sink the farmer into a state of insigni-

ficance. They contract his mind, and lock up his ideas from searching after new schemes, which is the only method by which improvements can ever be found out ; and therefore it follows, that a continuation of covenants is highly detrimental not only to the public good, but even to the interest of the proprietor himself, by lessening the rent that a superior cultivation, arising from a spirit of improvement, would be able to pay.

We are ready to admit that general rules of management are very proper in leases, such as, to keep the farm under a husband-like management, to consume all the straw raised upon it, and to sell no dung. These restrictions we will allow ; and every good farmer will follow them whether he is obliged or not. Nay, we will go farther—If leases of a proper duration were granted, it is very reasonable that the property of the landlord ought to be protected by restricting clauses for the 3 years previous to their expiration. But after all, it will be found that no clause can be inserted, besides the general ones already mentioned, that will serve to enhance the value of the land, but obliging the farmer, to leave a proportional quantity of such land in grass at the expiration of the lease. Other clauses serve only to distress the farmer, but will never promote the interest of the landlord.

Tithes.—The next obstacle to improvements is the collection of tithes in kind, or by an annual valuation ; and they are a burthen upon agriculture that must ever damp the operations of the husbandman. Indeed where the tenth of the actual produce is drawn, it is peculiarly exceptionable. The tithe-holders may have a right, by the laws of the land, to the tenth part of the *natural* produce of the earth. This we are not to contest ; but is it not an impediment to cultivation, that they shall also receive the tenth part of the farmer's labours, and the tenth of the additional crop produced by the improvements he has made, whereby "two stalks of corn have grown, where only one grew before ?" Surely not ; unless the drawer is at the tenth of the expence occasioned by these improvements : otherwise he not only draws a tenth of the natural produce of the earth, but also a tenth of the superior cultivation and additional manure bestowed upon

the land ; and more than that, a tenth of the farmer's industry, merit, and abilities.

We have already stated that sometimes the tithes are paid according to an annual valuation. Although at first sight this may appear as so much more rent, and is in fact considered by a number of people in that light, yet it operates much more severely upon the farmer, than the same sum agreed upon by him in the lease to be paid. This we will now endeavour to substantiate.

The rent paid to the landlord is a known definite, sum which neither falls nor increases whatever crops are raised by the farmer. If by good cultivation or strength of manure, he raises ever so luxuriant a crop, he only pays the same rent to the landlord, as if the ground had produced a more inferior one : therefore the farmer, so far as he is concerned with the landlord, receives the fruits of his superior management. But with regard to the titheholder the case is very different. He comes before harvest, inspects the fields, and finding them carrying rich crops, increases the rate of the tithe accordingly. Instead of paying 5 s. per acre, as perhaps he used to do, he is now obliged to pay 10 s. or 12 s. merely because he has managed his land in a manner superior to his neighbours. The case is exactly in point, if we suppose the landlord's rent was to be fixed by the goodness of the crops; the fatal consequences of which need no illustration. But whatever detriment this might occasion to improvements, it would not be a bit heavier than the other. The landlord has as good a right to a share of the extraordinary cultivation, manure, industry, merit, and abilities of the farmer, bestowed upon the fields he cultivates, as the titheholder can possibly claim.

Smallness of Farms.—The last thing we have to state, as an obstacle to improvements in the West Riding of Yorkshire, is the general small size of farms, which necessarily occasions the ground to be cultivated by persons, whose minds and stocks are incapable of carrying on spirited undertakings.

The proper size of a farm, is a question upon which theorists have often disputed. In our inquiries, we wish to be regulated.

by practical principles; and although we are fully convinced, that a farm of extent, operates as a spur to activity and diligence, yet we are not advocates for any system that would monopolize the lands of any country, by throwing them into the hands of a few.

An improved system of husbandry, requires that the farm upon which it is to be carried on should be of some extent, or else room is not afforded for the different crops necessary to complete a perfect rotation of management. The farmer, who practises husbandry upon proper principles, should not only have his fields under all sorts of grain, but likewise a sufficient quantity of grass and winter crops, for carrying on his stock of cattle and sheep through all the different seasons of the year. By laying out land in this style, the economy of a farm is so regulated, that too much work does not occur at one time, nor any occasion for idleness at another. This, when the expences of farm culture are so extravagant as at present, deserves particular attention; but cannot, in the nature of things, be justly and accurately arranged, where the farm is of small size.

It may be imagined, that the arrangement of farm labour, and the cultivation of the ground, whatever the size of the farm may be, is but a Rule of Three question; and that the smallness of the possession, only reduces the scale upon which improvements are to be carried on. In some senses of the word, this may be true; but will the result of the question be favourable to improvements? Upon 50 acres, labour may not be afforded for half a team; the inclosures would perhaps be a few acres, and the farmer would go to market to buy a single beast, thereby affording opportunity for spending half the year in idleness, wasting the ground by a number of fences, and occasioning more expence than the whole profit would repay. These things are the necessary consequences of arranging farm management as a Rule of Three question, and are great drawbacks upon the profits of farming.

Besides, an improved system of husbandry requires the farmer should be possessed of an adequate stock, a thing in which small farmers are generally deficient. It is an old proverb, the truth of

which we have too often seen exemplified, "that the poor farmer is always a bad one." Allowing he has knowledge, he cannot reduce it to practice, for want of the necessary means of putting it in execution. The smallness of the West Riding farms, and the precarious situation of the farmer's condition, arising from want of leases, as well as the trammels under which he is obliged to work, have, in a great measure, thrown capitals into another line. Before an alteration of these things takes place, persons of abilities, and possessed of stock, will be tempted to look down upon the profession, and agriculture will not be carried on in its most improved state.

With regard to the question, whether large or small farms are generally best managed? we apprehend very few words will suffice. Who keeps good horses, and feeds them well? Who makes the completest fallow, takes the deepest furrow, and ploughs best? Who has the greatest number of hands, and sufficient strength for catching the proper season, by which the crop upon the best of grounds is often regulated? Who drives the most manure, and raises the weightiest crops? We believe, in the general, these questions must be answered in favour of the large farmer. If so, it follows that the prevalence of small farms in the West Riding of Yorkshire, retards its improvement.

It is a popular doctrine, that large farms are unfriendly to population, and that they ought to be discouraged. We suspect this is founded in prejudice, and will not stand the test, if accurately examined. No doubt, if farms are increased in size, the number of farmers are lessened; this is granted: but with regard to the great scale of population, we are clearly of opinion it is not affected. If a more superior practice is carried on upon a large farm than a small one, this must be accomplished by employing a greater number of hands. What, therefore, is lost in one class, is gained in another. Besides, we have often noticed, that upon large farms most married servants are kept, which affords encouragement to the increase of population. Upon a small farm, from 50 to 100 acres, what is the farmer to do? he has not sufficient business for employing his attention, and the smallness of

his possession will not allow him to be idle. He therefore must work with his hands, which brings the question precisely to the same issue, as if all work was performed by hired servants, independent of the arguments we have adduced, that more work is executed, and more hands employed, upon a large farm, than upon the same extent of land divided into a number of small ones.

III. *IMPROVEMENTS SUGGESTED.*

Agriculture is the parent of all the arts, and the practice of it may be considered as a standard for the flourishing of others. It has for some years past been a principal object in the several governments of Europe, to frame laws and regulations for its encouragement; and the establishment of a Board for promoting Agriculture and Internal Improvement, shews it is not neglected in our own country. We have already presented to the consideration of that Honourable Board, a state of the husbandry in the West Riding of Yorkshire, and also pointed out for their information, the principal obstacles which are in the way of further improvements: we now proceed to suggest how these obstacles may be removed, and what alterations ought to be introduced into the husbandry of the district.

The improvements we suggest are,

- 1st. That all land should be let upon lease.
- 2^{dly}. That the covenants that presently subsist betwixt landlord and tenant should be discontinued.
- 3^{dly}. That the payment of tithes should be fixed by a permanent valuation.
- 4^{thly}. That a general bill should pass for dividing the common fields and waste grounds.

These we account the leading articles of improvement; without which no material encouragement can be given to the husbandry

of the district. In the hopes that the Board of Agriculture will consider them in the same light, we shall proceed to recommend,

5thly. More approved rotations of crops.

6thly. Breaking up the grass fields, and frequent changes of corn and grass.

7thly. Drilling and horse-hoeing beans and turnips.

8thly. Planting the waste grounds.

Many other articles of lesser importance might be added, but as most of them are already noticed in the foregoing parts of this work, we shall not now enter upon them.

1st. *That all Lands should be let upon Lease.*—We have often had occasion in the preceding pages to shew the baneful consequences attending want of leases, and how few real improvements will ever be introduced into the practice of agriculture so long as the farmer has no security for enjoying his possession more than one year. We therefore recommend, as a necessary step to encourage good farming, that leases should be granted of a proper duration. This would not only operate in favour of the farmer, but would likewise be the means of increasing the rent-roll of the proprietor; for no man will ever pay as much for an acre of land, while he is removable at pleasure, as when a permanency is granted him. Upon all lands already in a state of cultivation, we apprehend 19 or 21 years are very proper terms for the continuance of a lease. They afford the farmer time and opportunity to make improvements, and to receive a proper return for the money so laid out, without depriving the landlord, farther than necessary, of any advantages that might arise to him from a progressive increase in the value of his grounds. Without this security, no farmer will engage in any expensive or spirited management; and the state of the country will remain for ever precisely as it is.

2d. *That Covenants or Restrictions should be discontinued.*—If leases are granted of a proper duration, there will remain little occasion for covenants betwixt landlord and tenant, or restrictions upon the management of the latter. If it is thought necessary for protecting the landlord's property to restrict the

tenant for the three last years of the lease, we see little harm that would arise either to individuals or the public from that measure. Our ideas of a lease are, that it is a mere bargain betwixt landlord and tenant, wherein the former, for a valuable consideration, conveys over to the latter all his rights in the premises for a specified number of years, and that it ought to be left to the wisdom and abilities of the farmer to manage the land in such a manner as he may think most proper for enabling him to make good his engagements to the landlord. If leases were granted upon these principles, a great deal of unnecessary trouble would be saved to both parties ; improvements would increase with rapidity, and the peace, comfort, and happiness of that useful body of men, the farmers, be materially promoted.

Our opinions upon the clauses that should be inserted in a lease are plain and simple, and we beg leave to state what the heads should be.

Landlord agrees for a specified rent, to be paid at the terms of Candlemas, Whitsunday, and Lammas, after the crop is off the ground, to set such a portion of land for 21 years, and to put all the houses, offices, and inclosures upon the premises in habitable and fencible situation.

Tenant agrees to pay rent as aforesaid, and to forfeit his lease if payments are not made within six months after they fall due, with interest for the intervening time ; to manage the land in a husband-like manner, and not to sell straw or dung off the premises ; to support all the houses and fences during the continuance of the lease, and to leave them at its expiration in a habitable and fencible condition ; to leave *one fourth* of the farm in grass at least three years old, and likewise a *sixth part* of the remainder as fallow to the in-coming tenant, upon allowance being made him by valuation of neutral persons ; and if any difference arise, either during the lease, or about the situation of the houses and fences at the conclusion, such difference to be referred to arbitrators mutually chosen. If land was set agreeably to this method, the management of an estate would comparatively be an easy task to what it is at present ; and while no injury was done

to the landlord, the condition of the farmer, from being uncertain, would be respectable and happy.

We may offer another argument for meliorating the situation of the farmer, and that we hope is a laudable one. Without a lease, and bound up with fetters on every hand, his interest in the welfare or prosperity of his country is not equally strong. Whatever takes place, a shorter lease than an annual one cannot be granted. In a few words, the best security for the peaceable deportment of any man, is to place him in a situation that will be much affected by a change.

The farmers over Great Britain are a numerous body of men, and in every agricultural county, their influence over the lower ranks must and will be considerable. We speak from our feelings, when we say their general situation well deserves attention. If landlords neglect their own interest as well as that of the public, and persist in setting land without lease, and under absurd and pernicious restrictions, the subject deserves to be taken up by the supreme legislature itself. It may be asked, would you interfere with private property, and restrain individuals from managing their own concerns as they saw fit? Certainly, if that management is detrimental to the public good. To compare great things with small—Parliament have already interposed their authority in a case nearly similar. By the act of regulating the number of outside fares upon stage coaches, commonly called Mr. Gamon's Act, the legislature very laudably interfered with the management of private property, in order that the lives of the passengers might not be sacrificed for private gain. The only difference in the two cases would be, that in the one the coachman's profit was lessened by the regulation; whereas in the other the income of the landed proprietor would be increased by enforcing the measure now recommended.

We neglected to mention in its proper place, that the period fixed for the farmer's removal is both improper and inconvenient.

We believe that Candlemas is the general term over the West Riding, and that the in-coming tenant then enters to the farm precisely in the state it stands. That the wheat and grass sown

for that crop, and all the labour by that time performed immediately becomes his, upon paying his predecessor the value of the labour, manure, and seed expended. We apprehend, if these articles *can* be properly ascertained, there is no injustice done to the out-going tenant, as he would receive the same advantages at his entry. It might however happen, from this custom, that a farmer would never cut the crop he had sown himself; for where he had no lease, an unlucky concurrence of accidents might give him an annual removal. At any rate, the practice is not eligible, for it cannot be supposed that, after a warning is given, the out-going tenant is to pay the greatest attention to the ploughing or sowing a crop he is not to reap; besides, it interferes with the time for which servants are hired, and if a person cannot find another farm at once, what is he to make of them? We are also of opinion, that it is not the best time of the year for disposing of stock. We look upon the custom of removing from the houses at Whitsunday, and the last crop belonging to the out-going tenant, as practised in Scotland, to be far more convenient and advantageous to both parties, as it does not oblige the incoming tenant to have any unnecessary interference with the property of his predecessor.

Tithes.—The commutation of tithes has been long and ardently wished for by every real friend to the prosperity of his country, and till this is accomplished, agriculture must always struggle with great difficulties. We would be the last persons that would wish to injure private property of any kind, or trench upon the rights of so respectable a body as the Church of England, whose learning, character, and merit, require no fresh eulogiums. But surely, if the mode of collecting that property is injurious to the public welfare, and detrimental to its prosperity, some other method ought to be devised by which this tax might be paid, without occasioning such injury.

We have heard of many plans for reforming the tithe system, and all are attended with considerable difficulties. We are decidedly against giving land in lieu of them, as there is too much land in mortmain already in the kingdom. We shall mention two schemes,

any of which will remove the obstacle occasioned by tithes to improving agriculture, and will be attended with beneficial consequences to the tithe-holders themselves.

1st. Let all the tithes be valued by proper persons in each parish, under the authority of a Board instituted for that purpose; this valuation to remain unalterable, and be the rule of payment in all time coming. This would make proper compensation to the holders, whether laymen or ecclesiastics, and would remove the complaints of those who compare the present mode of payment to the *taille* or old land-tax of France, which was collected by the different intendants according to the goodness of the crop.

2dly. 'There is another plan, which we think best of.' After the tithes are valued as aforesaid, let them be offered to the respective proprietors of land at 30 years purchase, which every man, who knows his own interest, would gladly accept in order to be quit of them. The purchase-money, where they belonged the clergy, to be vested in government stock in name of the particular parish from whence it is produced, and the interest regularly paid to the incumbent. Where tithes are the property of laymen, the purchase-money might be immediately paid into their own hands.

Considering the subject in a moral point of view, every well disposed person must lament that the collection of a tax, purposely given for the support of religion, should be the means of creating disrespect for its ministers. There are no arguments necessary to prove, that where the clergyman differs with his parishioners upon this subject, the usefulness of his office is totally frustrated; which makes not only the practice, but even the profession of religion, be disregarded.

Division of the Common Fields and Waste Grounds.—The common fields in the West Riding afford greater scope for practical improvements than any other department of its husbandry, and are at present generally under most wretched management. This the proprietors must be sensible of, but the expence of a particular act of division intimidates many from applying to parliament for its interposition. It would therefore be of great

utility that a *general bill* was passed for that purpose, as is already the case in Scotland, leaving it to the judge ordinary of the bounds to put it in execution, when application for that purpose was made by any of the proprietors. It would be necessary in this bill to define the extent of manorial rights, and to settle the proportion to be allowed for tithes, in case they are not previously regulated. If the fields are divided, we see no necessity to force the proprietor to inclose whether he will or not, as is done at present, in consequence of the powers vested in the commissioners appointed to execute the respective inclosure bills. If the proprietor is attentive to his own interest, he will do it himself without compulsion, and at the same time do it more frugally, than when it is executed under a public commission.

With regard to the waste grounds which are very extensive, they ought to be divided wherever they are common. At present they are of very little profit to the different proprietors, being in general vastly overstocked, unless where they are stinted pastures, which is not frequent. If each person's proportion was duly ascertained, he could manage his own part as he saw most conducive to his interest. If it was worth while, he would inclose and improve. If it answered for planting, he might improve it in that manner; or he would manage it as uninclosed moors have hitherto been treated in other parts of the kingdom.

As we have mentioned the Scots laws for dividing commons, we give the following extract of the act of parliament passed in 1695, for regulating that business.

“ All commons, excepting those belonging to the king in property, or royal burghs in burgage, may be divided at the instance of any individual having interest, by summons raised against all persons concerned before the lords of session, who are empowered to discuss the relevancy, to determine upon the rights and interests of the parties concerned, to divide the same amongst them, and to grant commission for perambulating, and taking all other necessary probation, to be reported to the lords, and the process to be ultimately determined by them, declaring, that the interest of the heritors having right in the common

shall be estimated according to the valuation of their respective lands and properties; and that a portion be adjudged to each adjacent heritor in proportion to his property; with power to the lords to divide the mosses, if any be in the common, among the parties having interest; or in case they cannot be conveniently divided, that they remain in common, with free ish and entry, whether divided or not."

Introducing more approved Rotations of Crops.—If leases of a proper duration are not to be granted, and if the practice of binding up tenants with strict covenants is continued, it would be perfectly unnecessary to suggest any improvement in the mode of cropping the ground, as however willing the farmer may be to adopt new practices, he is in a manner prohibited from doing so by the conditions under which he holds his possession. But entertaining the sanguine expectations, that these invincible obstacles to good husbandry will soon be removed, we proceed to point out such alterations as in our humble opinion are proper to be introduced into the husbandry of the district.

Viewing the present state of farming in a general manner, it appears that the land in the West Riding is cultivated in two separate and distinct ways, and not managed so as to make improvements in one branch contribute to the advantage of the other. The fields which are laid down in grass continue in a state of pasture a greater number of years than is necessary for refreshing them, after being exhausted with corn crops; while the fields kept under the plough are hackneyed and worn out by successive crops of corn, without receiving any collateral assistance but what is given them by fallow and manure, with some passing clover crops.

We consider it as essential to good husbandry, to connect these different systems, and that the ground in no other way can be kept in a perpetual state of fertility, and made to produce its utmost value. While we decidedly condemn the keeping land exclusively in grass, we as warmly reprehend the contrary extreme of persisting uniformly in raising crops by the plough. The last named practice may be said to have necessity upon its side, whereas no excuse can be offered as a palliation for the other.

Upon the supposition that the system of keeping lands continually in grass will be departed from, and that the farmer will be allowed to cultivate his fields in such a way as he thinks most beneficial, we shall give our opinion upon the most advantageous method of cropping a farm ; or in other words, shew how it may be kept in continual good order, so as to enable the possessor to pay the highest rent, while at the same time it is understood he is to receive a proper recompense for the expence and labour he is at in cultivating it.

The first thing that is absolutely necessary for farming land well, is to lay it clean and dry. Where land is foul, carrying either quickens, or other weeds, it is impossible artificial plants, such as corns and grasses, can thrive. The ground is bound up, and the food that should go for the support of the plants sown by the husbandman is exhausted by these natural inhabitants of the ground. The crops, therefore, are scanty, being stinted in their produce, and inferior in their quality. Every good farmer will therefore use his earliest efforts to make his land clean. This he will do by complete summer fallows, or by fallow crops adapted to the different soils he possesses ; and having once accomplished his purpose, he will studiously endeavour to preserve it in the same husband-like order.

That land may be kept clean, a powerful assistant is gained from having it previously laid dry, or in a proper situation for carrying off the superfluous water that falls upon it from the clouds, or rises from the veins of the earth by springs, or from being situated upon a wet spongy bottom. This is done by ridging the land sufficiently high, for defending it against falls of rain, by casting out the water furrows, provincially “ griping the land ;” and by digging hollow drains, which when covered carry off the superabundant moisture, and occasion no loss of ground. These two things, laying the land dry, and keeping it clean, are in the power of every farmer, although they are more difficult to execute in some situations than in others ; but there is another principle requisite for bringing farming to its greatest improvement, which is to keep the land also rich ; this is often not in the power of the best farmer to command, and must in a

great measure be regulated by local situation, or by the particular quality of the land he possesses.

Having premised these things, which we consider to be the fundamental principles of good farming, we shall now throw out our ideas upon the way in which a farm should be managed, and the particular crops most advantageous to be raised upon different soils.

Upon all gravelly, sandy, and sharp soils, allowing there may be a degree of hardness in them, we recommend the turnip husbandry to be assiduously practised. Upon such soils turnips may be introduced every fourth or fifth year. In those parts where cutting the clover crop for hay, is attended with profit, they come in with propriety every fourth year; but in many situations, we judge it as advantageous, in place of sowing the barley crop with red clover, to sow it with white clover, trefoil, and rye grass, and to pasture it for two years with sheep; as red clover is found from experience not to answer well, when too often repeated. This gives the ground a proper cessation from tillage, invigorates its powers, prepares it for carrying a weighty crop of oats, with very little collateral assistance from manure, and allures nature with variety, which is always agreeable.

A farm managed in this style, will consist of five bricks or parts. 1st. Turnips. The first half of the turnips that are consumed, to be sown with wheat, the last half with barley, and both sown with grass seeds; pastured the third and fourth years with sheep, and limed if thought necessary upon the sward, or with the turnip crop, as is thought most advantageous; fifth year, broke up for oats, which will always be found in this way a profitable crop.

A farm managed in this manner (and the West Riding land, from being mostly inclosed is admirably calculated for it), will pay both proprietor and farmer better than most other soils. Expences of management, which is a great consideration, are comparatively trifling; and no foreign manure, when once the rotation is properly arranged, will ever be needed.

The same mode of cropping, although not with equal advantages, may be carried on upon all loamy soils, unless they have too great a portion of clay in them ; but if the farm is of a mixt nature, and has both dry gravel and loam in it, we recommend that the turnip brick may be so arranged as to take in both soils, and that those upon the loam be eaten off first, and the land ridged up immediately, which will both lay it dry, and afford opportunity for correcting the stiffness and adhesion it may have contracted by the pressure and poaching of the sheep.

Upon land where clay is a principal component part, or where the bottom is wet, we cannot recommend the cultivation of turnips at all, as often the profit gained from them is lost upon the following crops. The same objection holds against cabbages, rape, or any other plants that are to be eaten off in the winter months.

Lands of this nature are more difficult to manage, than those already described, and from being cultivated at a greater expence, are never able to afford so much rent to the proprietor, allowing the crops raised upon them should be as productive as those raised upon the dry soils. Beans is the only crop that can be introduced for cleaning the ground ; but although these are an excellent assistant, they can never preclude a complete summer fallow from being absolutely indispensable.

A farm of this sort ought to be divided into seven bricks or parts, and the following rotation is in our opinion most advisable :

- | | | |
|--------------------------------------|--|-----------------------------------|
| 1. Fallow, with dung. | | 4. Barley, sown with grass seeds. |
| 2. Wheat. | | 5. Pasture. |
| 3. Beans, drilled and horse
hoed. | | 6. Pasture. |
| | | 7. Oats. |

In order that a proper season for sowing the wheat upon such soils may not be missed, we recommend it to be sown by the middle of September. Crops early sown, though they never yield proportionably to their bulk, yet are generally most productive per acre ; and it is an important matter upon all clay soils that the seed should be put in dry. Wet harrowing not

only dibbles in the seed beyond the power of vegetation, but also poaches and binds the land, by which the plants are prevented from stooling, or tillering, and gives an encouragement to the growth of any quicken that may be left in the ground. The beans should get two furrows, the first across, and particular pains afterwards taken to water-furrow the land. The seed should be put in as early as possible, after the land is in a situation to stand a second ploughing, as the quantity and quality of the crop depend much upon an early seed time. Barley may be sown after two furrows, as if proper attention has been given to the bean crop the preceding year, the ground should be in good order, and spring ploughing upon clay land is always critical.

In the above rotation, a proper arrangement of labour is made for the whole season. The part destined for wheat is prepared during the summer months : the first furrow given for the beans as soon as the wheat is removed : next the barley land is fallowed down : then one of the pasture fields ploughed for oats, and the first furrow given to the next year's summer fallow. This concludes the winter operations. And in the spring, begin with the bean seed, next sow the oats, and finish with the barley seed ; which concludes the work of the season, and allots to each particular period a proper quantity of work, without hurrying too much at once ; which ought always to be regarded, especially upon clay soils, as a material object.

The thin, poor clays are the most difficult to farm of any kind of land, and nothing can be done upon them to the purpose, without the aid of a superior quantity of manure to what can be raised upon the premises. At same time it is perfectly unnecessary to lay a great quantity of manure of any kind upon them at once, for they possess a quality so corroding, that the aid so given to vegetation is soon wasted and lost. Where local situation will allow, we recommend such land to be kept in 5 bricks, and cropped as follows :

- | | | |
|------------|--|-------------|
| 1. Fallow. | | 4. Pasture. |
| 2. Wheat. | | 5. Oats. |
| 3. Oats. | | |

This rotation will pay very well, if manure can be got sufficient to cover the fallow brick. The pasture should lie only one year, as land of this kind does not improve in grass; and the oats will be found superior, in such a case, than if the grass had been older.

In order that the rotations above recommended, be followed out to the utmost advantage, it is absolutely necessary to pay particular attention to the fallow, or the turnip crop substituted in its place. As many different opinions prevail relative to the manner in which a fallow should be conducted, we beg leave to state our sentiments upon that head.

Upon all clay soils (and upon such only, we understand a complete summer fallow to be necessary) the first ploughing ought to be given during the winter months, or as early in the spring as possible, which promotes the rotting of the sward and stubble. This should be done by gathering up the ridge, which both lays the ground dry, and rips up the furrows. As soon as seed time is over, the ridge should be cloven down, preparatory to cross ploughing; and, after lying a proper time, should be harrowed and rolled repeatedly, and every particle of quickens that the harrows have brought above should be carefully picked off with the hand. It is then proper to ridge or gather it up immediately, which both lays the land in proper condition for meeting bad weather, and opens up any fast land that may have been missed in the furrows when the cross ploughing was given. After this harrow, roll, and gather the root weeds again; and continue so doing till the field is perfectly clean.

We observe that the celebrated Mr. Marshall, in his Treatise upon the Yorkshire Husbandry, recommends a practice quite different. In his opinion, ploughing is only necessary, and taking out live roots by the harrow, and carrying them off, is an evident impropriety. Mr. Marshall lately used similar arguments to one of us who had the pleasure of a personal conversation with him. We shall therefore do our best endeavours to obviate his arguments.

Frequent turning over the ground, although absolutely neces-

sary while the process of fallowing is going on, can never eradicate quickens, couch-grass, or other root weeds. In all clay soils, the ground turns up in lumps, which the severest drought will not penetrate, or at least not so far as to kill the plant contained in the heart of them. When the land is ploughed again, these lumps or clods are simply turned over, and no more; and the action of the plough serves in no shape to reduce them, or at least in a very imperceptible manner. If ever there was a season for making good fallow by ploughing, it was last year, viz. 1793; there was hardly a drop of rain the whole summer; the drought was excessive, and attended with an almost continued sunshine. Notwithstanding all these advantages, the fallows which were not properly reduced in the beginning of the season, took on a growth as soon as moisture came, about the beginning of harvest. Even when they were completely harrowed and rolled, it was found difficult to extirpate couch, as the dryness of the ground did not allow it to part so well from the clod as in seasons more moist.

If this was the case in such a dry season as last, what would the consequences be if the fallows were at all times to be wrought with the plough, without attempting to drag the roots to the surface by the operation of harrowing? In wet weather, the land might appear black above for a few days; but the enemy, being still in the house, would soon make his appearance. By carefully gathering all the root weeds, when the land is reduced by harrowing, which on many soils is only practicable after the roller is used, an enemy is converted into a friend; for if the stuff so gathered is accumulated into a heap, frequently turned over, till it rots, and mixed with lime, a most excellent compost is produced.

There is very little danger that clay-land will ever be too much reduced by the different harrowings and rollings proposed to be given; as the last furrow, if taken deep, will raise a mould sufficient for covering the seed, and for protecting the wheat during the winter. Upon such soils, nothing but frost will reduce and mellow the land perfectly; and we have seen the necessity of leaving;

fields of this description to be wrought in the spring, from the absolute impossibility of eradicating or killing the couch, till reinforced by this powerful auxiliary.

We shall just mention another argument in favour of gathering root weeds:—that in no other way can the purpose for which fallowing is intended, be so cheaply attained. Every furrow that is given, will at least stand the farmer 7 s. per acre; and if hand gathering will save one single ploughing, its expence is amply repaid; while at same time we contend, that more root weeds are taken off by gathering them once, than will be destroyed by a couple of ploughings, allowing the season to be ever so favourable.

We have heard of some other writers, that condemn clean summer fallow altogether, as an unnecessary waste of rent and labour; which, in their opinion, might be saved, and the ground kept in perfect good order by a proper rotation of crops. We apprehend upon all clay soils this is impossible; as every farmer who possesses such soils, knows by experience the difficulty of keeping them clean, even with the assistance of summer fallows. They are so often ploughed wet, from necessity, that a sourness and adhesion are contracted, which cannot be corrected without exposing it to the hot summer sun, and reducing it by frequent ploughing and harrowing. No crop can be substituted in place of fallow, for turnips are destruction itself. Drilled beans, as is already said, will do well as an assistant to fallow; but however much this crop may tend to *keep* land clean, that is already in good order, we apprehend, from the necessity of sowing them early, they will never answer as a substitute for one of the most radical of all improvements,—a clean summer fallow.

But want of fallows is not the fault of the Yorkshire husbandry: there they prevail to a much greater extent than necessary, and, unless where turnips can be introduced, occasion great drawback upon the farmer's profits. If good land be fallowed properly, can it ever be supposed necessary to repeat it after carrying only wheat and beans? When this practice is too often repeated, it also loses much of its effects, as the superior advan-

tages arising from a first fallow are known to all farmers : and while we condemn the system that would throw out the beneficial practice altogether, we are as decidedly against an unnecessary repetition of it.

Sowing down Land for Pasture.—We have in many places of this work described the manner in which the ground is sowed down for pasture, and mentioned that hay-seeds are the grasses most generally sown. The quality and kind of these hay-seeds are not easily ascertained, for the very sowers of them in most cases are absolutely ignorant of their properties. To us it appears they are sown in a wanton and unnecessary extent, and that good pasture could be got from sowing grasses of other sorts, the qualities of which are better known, and which would be easier eradicated when the ground is broke up for tillage.

The grasses that in our opinion are most profitable to the farmer for pasture, are white clover, trefoil, and rye grass ; perhaps where sheep pasture is intended, a small quantity of rib grass is not improper. The quantities of the above seeds that we recommend for making at once a good and close bite, are, 12 lb. white clover, 12 lb. trefoil, and one bushel of well cleaned rye grass for a statute acre. We are much mistaken if these will not at once fully cover the ground, and from their springing at different periods, fresh grass is always afforded to the stock. The expence of sowing an acre in this way, will upon an average of prices be from fifteen to sixteen shillings.

Where grass is intended for a hay crop, very different management is required. In this case, thick sowing weakens the plants, and deprives them of their vigour and strength. 14 lb. of red or broad clover, and half a bushel of rye grass is perfectly sufficient, and with these quantities, we have often seen as strong grass as could stand. Clover by itself always makes bad hay, although we are ready to acknowledge, that rye grass is detrimental, if wheat is intended to succeed. But considering the clover as a crop intended for eating green, or for making hay, there is a necessity for giving it a body and strength, by a small intermixture of rye grass, and the above quantity is sufficient.

It remains to mention that wherever grass seeds are sown, it is indispensably necessary that the ground be in a proper state of culture, and reduced as fine and equal as possible, or else the one half of the seeds will be lost. For want of attending to these precautions, great loss is often sustained, as not only the crops of grass are rendered small and scanty, but a failure in this respect is detrimental to the succeeding rotation.

Drilling Beans and Turnips.—The present mode of sowing beans and turnips broad cast is pernicious, and renders two crops, which are well calculated for cleaning the ground, instruments of its destruction. Beans and turnips are the only two crops that can be drilled to advantage. Wheat, barley, and oats are found both better in quality and quantity when sown broad cast; and the reasons are these.—When drilled, they are too much exposed to the weather, and are liable to be broke down and thrashed with every gale. Besides, they tiller or stool as long as any interval is left, which necessarily causes the grain to be unequal. While we are warm advocates for drilling and horse-hoeing beans and turnips, we cannot recommend the practice farther.

We have reason to suspect that the intricate nature, and expensive cost of a number of drill machines, have deterred a number of farmers from adopting this mode of husbandry. We venture to affirm, that the simpler the machines are the better, and that a bean drill, which is made by every common wright for 7s. 6d. and a turnip one for about double the price, sowing one row or drill at a time, will be found of more real utility than all the expensive complicated patent machines in the kingdom.

When beans are drilled, we recommend an interval to be left of 24 or 27 inches, and where turnips are meant as a complete fallow, about 30 or 32 inches. These admit a small plough drawn by one horse perfectly well, which, with the addition of the hand hoe, is the cheapest and most effectual way of cleaning these crops.

Horse-hoeing beans and turnips has this advantage, that it is the fault of the farmer, if his fields under these crops, in the

most adverse season, be foul and dirty. It is well known that beans, from being an open plant at the root, give opportunity to weeds thriving amongst them, which in a dry season, such as the last, will ruin them altogether. By horse-hoeing the intervals at proper periods, and running the hand along the drill, they are constantly kept clean; and a well managed field of them or turnips will necessarily be as clean, as the same crops in a garden.

Breaking up the Grass Grounds.—We have already mentioned that a considerable portion of the West Riding is continually kept in grass, and a stranger would be apt to think, from the vigilance with which it is preserved, that estates were entailed with that burthen upon them. As this exclusive system is, in our opinion, detrimental to the public, we shall now attempt to shew that breaking up these grass grounds could in no shape hurt the proprietor, but on the contrary would materially promote his interest.

Does ploughing the ground in a proper manner reduce the natural value of the soil? or, in other words, will it hinder land from carrying grass when it is laid down again? So far from that, it is often found necessary to convert pasture into tillage merely, that better crops of grass may be afterwards produced. Land, when uniformly kept in one course, tires for want of variety: and a farmer might as well expect his land to carry wheat every year, by the force of manure, as look for grass of equal value for a continued space of time. It is found that the two first years of grass, when the land is sown down properly, afford a greater return than the same number of subsequent years. They are considerably earlier, therefore of greater value; and from the youthful vigour of the plants, a large additional quantity of pasture is procured.

But allowing, for argument sake, that the land when in grass continues in a progressive state of improvement, still a considerable sum is lost to the proprietor from not ploughing his fields. We hold that land, after it has lain a certain number of years in grass, is able to pay an extra-rent. This, by continuing it in

the same state is totally lost ; because if it were ploughed for some years, and then sown down clean in good heart, it would carry more grass than ever.

A very great loss is sustained by the public, from the practice of this exclusive system. It requires no figures to shew that by breaking up land, at proper intervals, a great deal more corn would be raised, an additional quantity of manure procured for enriching barren soils, and much employment consequently to the people at large. These are important matters, and should be seriously weighed by every proprietor who keeps his estate principally in grass.

It may be asked, if the grass grounds are broken up, how are cattle to be fed for supplying the butcher ? We answer, by laying down the old ploughed fields, which would be as much benefited by a cessation from ploughing, as the other renovated by it. We apprehend as much grass would be raised in the way we are describing as ever, while at the same time the quantity of corn would be greatly increased.

With regard to the western parts of the Riding, where there is at present nothing but grass, we are dubious whether we can recommend cultivation by the plough in the same extent. The climate is wet, and corn husbandry must be precarious. But we are convinced of the propriety of raising as much as is necessary for supporting the inhabitants. Corn has already been cultivated there, for all the low fields have at one time or other been ploughed ; and we suppose, the climate would then be similar to what it is at present. We have no doubt but that by sowing grain very early, it might all be harvested in proper time. Fallow wheat might be sown by the end of August, or first of September, which with Dutch, or Poland oats, would always make an early harvest. But before any of these rich fields can be broke up, the tithe system must undergo a change, as it would be a notable affair for a tithe holder to have a tenth of the weighty crops they would produce. From respectable authority we learned, that the payment of tithes, was in a great

measure the cause of laying these fields totally in grass, and that they continue to operate as a prohibitory restriction against breaking them up.

Planting the Wastes.—If the wastes were divided, we are fully convinced that much improvement might be made by planting Scots firs and larches upon many parts of them. These kinds of wood are at present held in little repute, and are indeed scarcely known in the West Riding. As a great deal of fir wood is at present imported from the Baltic, they might in time render that in a great measure unnecessary. They would answer for roofing cottages, for fences, and many other useful purposes. The subject deserves attention, and we are humbly of opinion that the far greatest part of the moors in this district can never be improved in any other way.

CONCLUSION.

We have now finished this Report, in the course of which we have been under the disagreeable necessity of attacking many practices and customs, which we think pernicious and destructive to the improvement of agriculture. While we have spoken upon these subjects in a style, that may be probably thought warm, we have never entertained the most distant idea of giving personal offence. The proprietor may perhaps think at present that by with-holding leases he gives no discouragement to agriculture, and that covenants are necessary, to prevent his property from being injured. We have attempted to show the pernicious consequences these practices have upon agriculture, and that it is impossible for the farmer to introduce solid improvements, till these obstacles are removed.

With regard to the tithe holders, they are perhaps of opinion, that the full value of them is as much their property, as any landed freehold would be, and therefore may stand justified in their own sight, for a rigorous collection. We have attempted to prove that a collection in kind, or by an annual valuation, is

hurtful to agriculture, by operating as a tax upon the farmer *proportionally to his merit and abilities*, and that the public good requires that a general valuation of them should take place. We have further shewn, that this valuation would not lessen the present amount of the tithes, although it would prevent them from being a continued and increasing burthen upon the possessors of land ; and that a payment in this manner would not only be conducive to the public good, but also promote the welfare and utility of the clergy themselves.

With regard to the interests of that useful body of men, the farmers, we have endeavoured to shew how much their situation would be meliorated, and the practice of agriculture improved by the proprietors granting leases of a proper duration, free of these useless restrictions and covenants that now subsist in agreements for land, whether annual, or for a greater number of years:

These things we humbly submit to the consideration of the Board of Agriculture, and we entertain the sanguine hopes, if the improvements we have suggested are sanctioned by their approbation, that this sanction will have great influence in correcting the abuses we have described, and contribute to improve the husbandry of the West Riding of Yorkshire : by which means the interest of the landed proprietor will be augmented, the peace and happiness of the farmer increased, and consequently the public good materially promoted.

POSTSCRIPT.

A very ingenious paper upon the management of cows in the neighbourhood of London has been laid before the Board of Agriculture by Baron D'Alton, a foreign nobleman ; and from the accurate calculations therein given, it appears, keeping cows in the house is more profitable husbandry than pasturing them in the fields, as is commonly done. During our survey of the

West Riding we made repeated inquiries whether any such practice prevailed in that district ; the result of which were, it was only done by a few cow-keepers in towns, who had little or no land. By a letter, received since our return from Mr. Stockdale, at Knaresborough, we were informed that this practice was common at Leeds. We therefore wrote to a gentleman there, desiring him to inquire if it was found beneficial. The following is a copy of his answer.

SIR,

Leeds, Jan. 15, 1794.

There are a few cows kept in the house all summer, and the way in which they are managed, is by giving them grass fresh cut, and watering the ground as the grass comes off, with the urine from the cows. The urine is preserved by a cistern placed on the outside of the cow house, and is conveyed to the land at almost all seasons, but the most profitable time for doing it is March, April, and May ; by which means, and the addition of horse dung applied during the winter months, the field may be cut 4 or 5 times during the season. I am told 4 acres of land will, in this method, maintain 10 cows ; and the winter they are fed with grains from the brewers, which are very high in price, being 3 s. 6 d. per quarter. It will take about four pounds worth of grains to maintain a cow for the winter months, and two pounds for grass during the summer : so the expence of a cow for the whole year is about six pounds.

I kept 13 cows one winter, which were fed upon turnips and oat straw, and never got a mouthful of hay. They yielded me 30 gallons of milk per day, which, six years ago, sold upon the spot, to the retailers from Leeds, at $5\frac{1}{2}$ d. per gallon. They carried it a mile, and sold it out at $6\frac{1}{2}$ d. and 7 d. per gallon ; but it is now advanced to 8 d. and 9 d.

I must notice to you, that the taste of the turnip is easily taken off the milk and butter, by dissolving a little nitre in spring water, which being kept in a bottle, and a small tea-cup full put among 8 gallons of milk, when warm from the cow, entirely removes any taste or flavour of the turnip.

In the management of cows, a warm stable is highly necessary, and the currying them, like horses, not only affords them pleasure, but makes them give their milk more freely. They ought always to be kept clean, laid dry, and have plenty of good sweet water to drink. I have had cows giving me 2 gallons of milk at a meal, when within 10 days of calving, and did not upon trial find any advantage by allowing them to go dry two months before calving. The average of our cows is about 6 gallons per day after quitting the calf.

If this statement affords the Board of Agriculture any information worthy their notice, I will be happy at being the instrument of it; and all I have said is from experience. You have my sincere wish for the laudable work you are engaged in being crowned with success, and I am, &c.

In addition to the above very sensible letter, we may add, that one of us for some years has kept his cows in the house upon red clover and rye grass during the summer months. They are put out to a small park in the evening after milking, for the convenience of getting water, and tied up in the house early in the morning. One acre of clover has been found to go as far in this way, as two when pastured. More milk is produced, and the quantity of rich dung made in this method, is supposed to compensate the additional trouble of cutting and bringing in the grass.

APPENDIX
TO THE
AGRICULTURAL VIEW
OF THE WEST RIDING OF
YORKSHIRE.



APPENDIX.

No. I.

ACCOUNT OF THE DIVISION OF THE FOREST OF KNARESBOROUGH.

BY ROBERT STOCKDALE, ESQ.

THE Forest of Knaresborough, till the year 1775, consisted of a great extent of ancient inclosed land, comprized within eleven constableries, or hamlets; to which belonged a tract of upwards of 30,000 acres of common, whereon Knaresborough, and several other towns, not within the eleven constableries, claimed, and had exercised a right of common, and turbary, equally with the owners of property within these eleven constableries. This waste, in its open state, yielded the inhabitants fuel, and pasturage for their sheep, horses, and stock of young cattle; and some opulent yeomanry profited exceedingly thereby; but to the necessitous cottager and indigent farmer, it was productive of more inconvenience than advantage; if not to themselves, at least to the public at large, who was by that means deprived in a great measure of the exertions of the farmer, and the labour of the cottager and their families; for it afforded their families a little milk, yet they would attempt to keep a horse, and a flock of sheep. The first enabled them to stroll about the country in idleness, and the second, in the course of every three or four years, were so reduced by the rot, and other disasters, that upon the whole they yielded no profit.

In 1770, after various struggles, an act was obtained to divide and inclose this extensive waste, and the powers thereof committed to no less than five commissioners, and three surveyors, all or most of them unequal to the undertaking, from whom both great delay and expence were incurred. After four years had elapsed, an amendment of this act became necessary, which was obtained in 1774. Thereby a sixth commissioner was named, who had been appointed a surveyor by the first act, and who had thought proper to execute his duty by a deputy. In 1775, the commissioners

made out a description of their intended allotments; and in or about the year 1779, they executed their award, which unfortunately is deficient in every essential requisite: but with all these inconveniences, the generality of proprietors, to whom allotments were made, and particularly the small ones, set about a spirited line of improvement. The poor cottager and his family exchanged their indolence for active industry, and obtained extravagant wages; and hundreds were induced to offer their labour from distant quarters; labourers of every denomination, carpenters, joiners, smiths, and masons, poured in, and met with constant employment. And though before the allotments were set out, several riots had happened; the scene was now quite changed; for with all the foreign assistance, labour kept extravagantly high, and the work was executed defectively, and in a few years many inclosures almost prostrate, and of course required making a second time. All these circumstances, taken together, were a heavy load upon the allotments, and in general rendered them very dear purchases. The forest, however, got in a great measure cultivated, and rendered a wonderful increase of product to the public, though at the expence of individuals. A public, or turnpike road was opened through the centre of the forest, which opened an easy communication between Knaresborough and Skipton in Craven, and the manufacturing towns in the north-east of Lancashire. And though scarce a single cart was before seen in the market of Skipton, not less than 200 are weekly attendant on that market at present.

In consequence the product is increased beyond conception, the rents more than trebled, and population advanced in a very high degree; indeed the lands, both ancient and those newly inclosed, being exonerated from tithe, a full scope was given to spirited cultivation; and to the credit of small proprietors, they took the lead, and brought their small shares first into the completest state of cultivation. I wish it was in my power to say as much of the large proprietors, but facts will not warrant it. On the contrary, I know of very few men of independent fortune, or others to whom large tracts were either assigned as their stipulated share, or acquired by purchase, under the clause for sale to defray the expence of the act, who have made any improvement, or scarcely effectually ring-fenced their property.

Many impediments prevented their activity; first, what was to be done must be committed to the care of servants, or agents; secondly, the extravagance of wages, by reason of the want of inhabitants; and above all, the impossibility of letting large tracts as farms, where it must be a series of years before any returns could be expected, or even winter provision obtained for their working horses. These obstacles operated to a total neglect, or desertion; and in consequence, large tracts indeed at this hour are in their wild uncultivated state.

If I may be allowed to offer my sentiments how to turn these tracts to better advantage, I should advise building a number of cottages, with suitable small outbuildings, and laying to each not more than 10 acres of land; tempt individuals by suffering them to live rent-free for the first seven years, but obliging them to break up two acres annually, till the whole was improved, then fix a reasonable rent; and add 10 acres more for the same term, and conditions; and so proceed gradually, till the whole of such part, as would admit of cultivation, was gone through. The land thus improved, would be considered by the inhabitants as the work of their own creation, and nothing but cruel treatment by their landlords would drive them away. In

a few years population would improve, and that once locally obtained, every other difficulty would vanish.

Several considerable tracts of this forest have fallen to my lot, both as assignments in right of former property, and by purchase; most of them were of the worst strata, being either confined bogs, or cold steril clay, mixed with white sand, and the surface pared off for fuel. Little profit could be expected from such kind of property; but nevertheless, I attempted improvements, which many condemned me for; and I frankly confess, my expectations were not gratified, though I still flatter myself my efforts are not wholly useless, as my errors may probably enable others to benefit, by shunning the like plan.

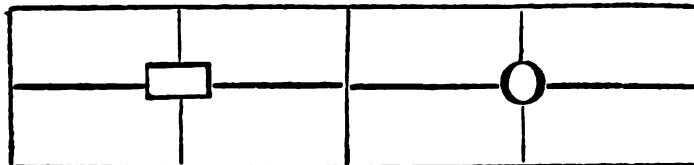
I will state the means I first took, and then point out the errors, or propriety of them; and afterwards give a short account of my present mode of management.

When I first took possession of the clay parts, so injured as stated, by being pared for fuel, I was eager to get my ring-fences completed, and thereby was led to give extravagant wages, and by employing strangers had them badly executed; these men wanting subsistence-money, while completing a contract, were generally in advance before their labour, and rarely finished them, even in their own defective mode, and the work, particularly stone fences, was to do over again; this was folly. I then purchased oxen to plough with, and ploughed as deep as possible; by which means stones were ploughed up, where none were expected, which would have made the fences, and saved a great deal of the former expence of leading from a distance. Had I now to begin, I should first plough as deep as I could with oxen, collect the stones raised thereby, and make a broad case of a fence, at least 30 inches, and raise the wall no higher than the stones would serve to surround the allotment; and rest satisfied therewith till the next ploughing, whereby more stones would arise, which I would use in raising the wall gradually to its proper height; by this means, the walls would be more substantial, and raised at one-third of the expence.

After the first deep ploughing, I left it in that state a year, exposed to frost and heat, then harrowed well, and ploughed across, and added three chaldron, or nearly 100 bushels of lime per acre, to make the land fall, and correct the acidity; and in the spring following sowed with oats, after a third ploughing; and the next year, pease or vetches; then fallowed, and limed as before, and took two crops to each fallow, so limed; until I found the repetition of lime did harm, instead of being of advantage. In place of this, I now take one crop to each fallow, have better crops, and save two guineas per acre by withholding the lime, which cost me 14s. per chaldron; by this means I get only six crops in twelve years, but which produce more than eight crops by the other mode, keep the land in better condition, and save eight guineas, before expended on lime. Probably lime may be again necessary at a future day; but I am confident, that with some sorts of lime, you may use it till the land will neither produce corn nor grass. The quality of lime varies much; we have two sorts, one burnt near Ferrybridge, and another at and near Knaresborough; where the heaps of the first are laid, there is always the best crop; but where the heaps of the other are laid, you will frequently find the land steril for several years. The first sort is burnt from compact strong stone, the other from a porous marly stone. At proper intervals I sow with grass seeds, eat them the first year with sheep, and lay all my fold-yard compost on the grass, except where some small parcels that will grow

turnips demand it. But this kind of clay land will neither answer well long in tillage, nor in grass, but must be frequently changed. By treating this cold clay soil in this mode, building small houses and barns, and working with oxen, I have improved the land so as to be able to let it at 10s. per acre; but I must observe, that had it been titheable, the tithe alone would have utterly precluded my efforts, for the value of the tithe would often have been more than my profit.

In making my subdivisions, I divided them into 10 inclosures as nearly as possible, and the year preceding the planting quick wood, or white thorns, I prepared the ground, where the fences were intended, by frequent ploughings, and planted potatoes. In the autumn, after these were gathered, I made a ditch, breasted the caw with stones, and planted the wood behind the caw, taking care to have the ditch on the higher side of the fence, so as to intercept the water before it reaches the roots of my quick-wood; and as warmth and shelter are desirable attainments in all high exposed situations, within my fences I make a border plantation about 20 feet wide, fence this off with quick-wood, and also fill my subdivision fences with forest trees most adapted to the soil. For though these may ultimately prove injurious both to the fences and the land, yet when that begins to be the case, they are easily taken down, and serve for stakes and bindings, when the hedges require cutting. As water is not always to be had in every situation where it is wanted, I make a square, or round pond, where the fences intersect one another, so as to make one pond serve to supply four closes, thus:



By this means, I can either plough or pasture any close without inconvenience, and if the strata be ever so open or porous, yet other ponds are easily made retentive, by digging them deep, then laying a covering of lime, or lime ashes, at the bottom and sides, which will prevent worms and moles working; afterwards puddle it well with earth and water, and when that is got dry, pave with small stones the inlets out of each close for the cattle to drink at; and then open ditches to let water into the ponds; and if well executed, they will afford a due supply of water during any dry season. A farm of this unkindly soil, and high situation, will turn to best account in having it occupied in regular courses of one-third arable, one-third meadow, and the remainder pasture, stocked with young breeding stock; and by changing the land from meadow to pasture, and pasture to arable in due succession, and always wintering as much or more stock than you can support in summer, you will of course raise considerable portions of dung, and thereby ultimately improve the soil. This

plan is, however, to be far exceeded in rapid improvement where inhabitants abound, so as to enable you to let your property in small parcels, by building small, yet such buildings as are calculated to answer the purpose of any established manufactory.

In the cultivation of my boggy allotments, I was equally erroneous in my first outset; for I rushed hastily to effect a drainage, and pursued the advice and plan of one very well versed in that operation, where the defects were only surface water, or day springs; my drains were judiciously placed, well cut, properly filled, and ample bottom apertures left; but unfortunately the nature of the springs or water was of the same hard incrustating quality as the dropping well at Knaresborough, and this soon adhered to the sides, and every obstructing particle within the drains, so as to block them up; I was then obliged to open them, and suffer them to remain open, at least for a considerable time; even some of them yet emit such hard water as not to allow of covering. This occasioned much expence, and some delay; but having got the surface water off, I pared and burnt, and took rape or turnip, and a succession of oats and fallow, till I could get it into a state for grass; and then I sowed such parts as were become firm by draining, with hay seeds, and a species of clover called cow grass, being our native honeysuckle grass, which is perennial, and having a solid stem, does not contain so much fixed air as red clover, and consequently never blows cattle.

In this state it has remained eight or ten years, is very good pasturage, and will even feed a Scotch bullock. Such parts as were too boggy to be totally corrected, I have made into willow garths, and plantations of other aquatics, which thrive tolerably well; and in a few years I have no doubt will yield considerable profit. I still keep draining them where defects appear; and when I am fully convinced the covered drains will not require opening again, and that the land will bear the operation of the plough, I will turn the swarth down, roll, and then sow with oats before I harrow, afterwards harrow the seeds in, and roll again. The next-autumn, winter fallow, and in the succeeding spring prepare the land for turnips; and in the year following, if the land is sufficiently clean, sow oats and hay seeds, cow grass, and white clover, and then convert it to pasturage.

When the land, which is of a loose black earth, was last in turnips, it happened to be a very frosty hard winter, yet I observed that the turnips that grew thereon were less affected by the weather, and lasted good longer in the spring, than any that grew on much better soils; and this I have since often noticed on land of the same quality in other situations.

No. II.

ACCOUNT OF THE VALE OF SKIPTON. IN A LETTER FROM A
GENTLEMAN IN THAT NEIGHBOURHOOD.

GENTLEMEN,

Nov. 9th, 1793.

IT would have given me particular pleasure, as a sincere well-wisher to your undertaking, if I could have acquitted myself more successfully in the inquiries you honoured me with; but I shall give you the best information in my power.

With regard to the ancient state of this vale, I do not find, upon inquiry, that there has been any material alteration or improvement for the last century or more: in some parts of Craven, though not near this town, I understand that, even within the last forty years, there was a considerable portion of land in tillage; the ploughing was then performed by four or six oxen, and one or two horses; and I am informed that mode of husbandry answered very well. Craven was then famous for a breed of long horned cattle, particularly oxen; but since the introduction of Scotch cattle and grazing into the country, the long horned breed, and of course the tillage, has been neglected. One cause of this is the easy expence that attends this mode of husbandry; with one servant, and two horses, a farmer can very conveniently manage seven or eight hundred acres of land; indeed, most of the grazing farms in this vale are very large, often three or four are united under one occupier.

The Earl of Thanet is the principal proprietor of land in Skipton; and, I am told, is not willing that his fine land should be ploughed; but it would certainly be a great advantage to the neighbourhood, if a proper mixture of grazing and tillage could be introduced; for though the country is not, or ever will be populous, while the present mode of husbandry and monopolizing farms prevail, yet corn is generally higher in Craven than in most parts of the kingdom, because so very little is produced. If you suggest to them, that the uplands may be kept in tillage; the reply is, that they are so much exposed to mists, and the situation so cold, that corn, particularly wheat, cannot feed or ripen. This may be in part just; but the stronger reason with them seems to be, that the uplands are very useful to them upon their present plan, to prepare the lean cattle for the better pastures; which some say, would be too rich for them in that state; nor would their improvement, at first, be equal to such keeping.

The extent of the Vale of Skipton cannot be accurately ascertained; indeed, a very small part bears that name, being generally included in the vale of the river Air, which extends from Leeds, in a north-west direction, to the source of the river, about thirty-five miles, is upon the average about a mile broad, in some places more, yet not so much (I think) as to add a quarter to the average. Grazing is the general mode of occupation in this vale, except in the neighbourhood of the manufacturing towns, where convenience will command a higher rent than the grazier can afford to pay. Six pounds per statute acre, and sometimes more, will be given for land in such situations:—grazing will not answer to half that price.

The greatest improvement I hear of is in the mode of draining, which is now done with stones above and below, and walled with them on each side: the price of this work for a yard deep, is about 1 s. 6 d. per rood of seven yards, including the stones, a cart load of which will complete a rood, and is worth about 3 d. at the quarry. There is likewise a kind called a shoulder drain, practicable only in clay lands, which is made by using a narrower pointed spade at the bottom, which leaves a kind of shelf, or shoulder, on each side, to prevent the earth with which it is filled, from falling to the bottom: the uppermost spadeful is first laid in with the turf downwards, it is then filled with the mould; the surplus (as there is always some) is either made into a compost with lime, or spread immediately upon the land. The price of this sort of draining is about 6 d. per rood, at a yard deep; and so on in proportion. The drains, before these abovementioned were introduced, were usually covered with brush-wood, or perhaps straw or rushes.

It is worthy of notice, as it appears to me of great service to the land, as well as very profitable to the occupier, that most of the principal graziers take all their stock out of some of their best pastures in the beginning of July, and put nothing in them till about Michaelmas, when they are equal or superior to the best fog; indeed they call this, fogging their pastures. The favourite grazing stock here, are the black Scotch cattle, some sheep; but on the lowlands very few, and on the uplands and moors not very numerous:—it is much to be wished that the propagation of this useful and profitable animal was more attended to.

Price of labour. A man servant about ten guineas per year, with board and washing in his master's house; a woman about five guineas, with the same; day labourers in husbandry about 2 s. or 2 s. 6 d. per day, finding their own victuals: about ten years ago, 1 s. or 1 s. 2 d. was the common price; the advance owing to the introduction of the cotton manufactory into a country so little populous. They work from six to six in summer, and from eight to dark in winter.

Price of provisions for the last year: beef, mutton, veal, and pork, about 4½ d. per pound, of 16 ounces; butter about 1 s. or 1 s. 1 d. per pound, of 22 ounces: wheat about 8 s. per Winchester bushel: oats 28 or 30 s. per quarter.

The climate and weather are unfavourable: we have sometimes very cold east winds in the spring for three months, often to the middle or end of May; in autumn we have very often heavy and continued rains from the west, owing to our situation among so many hills; from the same cause, we have frequent thunder storms in summer.

Our roads are very much improved of late; the canal which is carried through this valley, seems to have taught us the possibility of making tolerably level roads, even in

a mountainous country; several excellent ones have been made within the last five years; the materials chiefly lime-stone, broken to about the size of an egg.

Tithes are generally collected in kind, and are very reluctantly and ill paid. Since the introduction of grazing into the country, they are reduced in an astonishing degree; the lands which are most profitable to the occupier, are least, or indeed not at all so to the clergyman;—he must either submit to this, or involve himself in a tedious and expensive law suit, for agistment tithe, perhaps against an obstinate and powerful combination of the farmers and land-owners. It is the opinion of the most intelligent people here, that the present mode of collecting tithes is one principal cause of the high price of corn. Large quantities are continued in grass, which would be ploughed to advantage, if a certain and general commutation for tithes could be established. I wish the above hints may be of any service to your business; if you think me capable of further information, I shall always be happy to contribute my assistance to so laudable an undertaking. I am, &c.

No. III.

Information received from MESSRS. TWEEDAL and NOBLE, Stewards to Mr. BEAUMONT, relative to his Woods and Sheep:—transmitted by Mr. THOMAS HAGUE, Farmer at Bullcliffe.

Sheep. The Herefordshire sheep have had a better pasture than what the Shetland sheep have had, but they have not made so much improvement as might have been expected, nor have they fattened their lambs so well as what a Peniston ewe does upon the same ground. We are of opinion, that with a Herefordshire tup, and a Peniston ewe, there would be a good stock produced for this country; of which we are making a trial: it is also thought that their wool will be very good.

The Shetland sheep have improved a good deal in size, but do not make themselves fat; nor has their wool improved in fineness, but has grown longer. We are of opinion that these sheep are more adapted for mountainous countries, or drier land than what it is about this neighbourhood.

Woods. It is the custom in this part of the country, when a wood is ready to go down, to set out, and leave as follows, viz.

Every 21 years.

Poles, supposed to be left for a future fall, being judged to be 20 years old, which in 40 years more, it is supposed, would be timber trees,—left on an acre upon an average - - - - - 180

Trees, supposed to be 40 years old, left on an average per acre - - - - - 10

Timber trees, supposed to be 60 years old at the time they are ready to go down, judged to be taken down on an average per acre - - - - - 10

Reasons why the underwood is not kept cut quite down, viz.

The brush or underwood would not turn to any profit, except that it stands for 21 years, and then it is taken down along with the timber, for different uses; such as binding hedges, making riddles, burning for charcoal, and many other uses. The trees that are left are at such a distance from one another, that they do not prevent any thing from growing, but what will pay in twenty years time: but if the brush or underwood was kept quite cut down, it would neither be so well for the timber and younger wood; that method having been tried, it was found that neither the wood nor the bark made so much improvement, owing to its being starved in the bottom, when the underwood was not admitted to grow.

A tree left for a future fall, is chiefly one that grows from its own stem, and what we call a lording, and perhaps only forty years old, which, to stand twenty years more, in general pays better than to take it down at that age.

It is supposed, when a fall of wood is ready to go down, that with the poles, underwood, &c. it is worth fifty-five pounds per acre, upon an average.

The value of wood set out to stand for a future fall, is judged at the time of its being left, to be upon an average worth eighteen pounds per acre.

The woodlands in general, if they should be quite cleared of all the wood, underwood, &c. and put into cultivation, which would be at an enormous expence, it is supposed, would only upon an average be worth five shillings per acre.

It remains to be added, as another reason for taking down wood in the manner we do, that by this method we have wood for all sorts of customers; and as such can dispose of it to more advantage and convenience. The small wood is used for laths, baskets, punchcons for coal pits, hedge stakes, &c. the larger for husbandry implements of every description; the large timber for house-carpenters, ship-carpenters, coopers, &c. &c.

Leases.—It is the general opinion that a notice for a tenant to quit a farm ought to be two years, instead of six months, which is the practice in this part of the country; and it is thought it would be more proper, that at the time a notice is given by the landlord or tenant, that the farm should be looked over immediately, and a valuation made of the same, so that a farm should be kept in the same condition for the two years, as what it was at the time the notice was given; and that there should be an additional allowance for land which has been laid down for one, two, or three years, if the same has been pastured with sheep or cattle; for at present there is not any allowance made for laying down the land, but only for what tillage has been laid thereon; and if the land has been once mown since manuring, then an allowance is only made for half tillage; but should the land have been mown twice after manuring, then not any allowance at all is made to the tenant.

No. IV.

LETTER FROM DR. HUNTER, OF YORK.

DATED DEC. 6. 1793.

GENTLEMEN,

WHEN I had the pleasure of seeing you at York, I remember that our conversation turned upon the use of rape dust as a manure, which the farmers round Aberford, in the West Riding of this county, employ for their barley and wheat crops; their land is a thin lime-stone. The rent per acre is not considerable, but lies at such a distance from any large town, that if it were not for this article, the farmers could not procure manure sufficient for their corn lands; the quantity used is two quarters for barley, and three quarters for wheat. It is sown by hand, and harrowed in with the grain. If rain falls within a few weeks after sowing the barley, the crop is generally good; but if no rain falls the benefit of the dust is lost, without any advantage being gained in the succeeding crop. For wheat it is always a certain manure, in consequence of the wet season that follows the sowing of that grain. The price of rape dust is 14s. to 19s. per quarter; but from the improvements made in the mechanical powers employed at the mills, the dust is not so good as formerly. I do not think that sufficient attention is paid to top dressings when the soil is light. A large quantity may be obtained by putting sawdust on the floors of the necessaries; which should also be receptacles for excrementitious substances of all kinds. In large towns, sawdust can be obtained at a low price. Moor earth may be employed as a substitute.

My numerous avocations in the line of my profession deprive me of the satisfaction of gaining much practical knowledge in agriculture. What little I know may be found in the "Georgical Essays," published a few years ago. I am, &c.

N.B. In the neighbourhood of Tadcaster, it is said that the rape dust is as good in quality as ever. It was formerly bought for 7s. but that is now worth 18s. or 19s. per quarter. It will answer for two or three following crops. Barley requires four quarters per acre, which should be thrown upon the land early in the spring before the barley is sown, if soon after Christmas the better. Three quarters per acre is sufficient for wheat, to be laid on when the wheat is sown.

The rent of land, where rape dust is used, is in general from ten shillings and sixpence to eighteen shillings per acre.

No. V.

EXTRACT OF A LETTER FROM WM. PAYNE, ESQ. OF FRICKLEY
NEAR DONCASTER. DATED NOV. 30, 1793.

GENTLEMEN,

I LAST week saw your queries on the state of agriculture in the West Riding, inserted in the Doncaster paper, and have taken the liberty of answering them, according to your request, in the address that precedes them. And having understood, that the indefatigable President of the Board of Agriculture was desirous of obtaining a *detailed* survey of England, I shall principally confine my replies to your inquiries to the parish in which I reside, Frickley cum Clayton, and the extensive and populous one adjoining it northward, South Kirkby. Yet these answers will, I believe, *generally* apply to the whole tract of country lying between the market-towns of Doncaster, Rotheram, Pontefract, Barnsley, and Thorne; in divers parts of which district I have resided, and practised agriculture, as a freeholder; not having been without the means and inclination of acquiring some intelligence in many departments of its rural economy. As a true friend to the solid prosperity of my country, I am a sincere well wisher to its agriculture, as the only sound basis of its real and permanent interest; and though I do not wish manufacture in general to be depreciated, yet I am convinced, that if a considerable portion of the public industry and capital which for some years past has been applied to the manufacture of foreign materials, had instead thereof, been employed in the cultivation of our extensive wastes, the profits on the *whole* of such employment to the *public* would have been immensely superior. On this view of the subject, the institution of a Board of Agriculture may be important to the national welfare, if the public spirited activity of true patriotism abounds in its members; but if there is not a degree of that liberal principle, sufficient to promote, and obtain some modification of certain impediments to the extension of our agriculture, the attention of the Board to any other means of exciting and encouraging rural industry will ultimately be contracted, by the mere expedients of the day, and the labours of its useful members prove in vain.

The soil of this district is of three kinds, with their varieties, viz. 1st. A dry loamy hazle soil, on a rock of soft gritstone; 2d. A wet or clay soil, which abounds most.

here. 3d. a fine dry loam, on a rock of lime-stone. I think the climate more favourable and mild than in some other parts of the county, with less rain.

Nearly three-fourths of the lands are employed in tillage, the other fourth part is chiefly clay land, meadow, and pasture: but the practice of ploughing old swards, and laying new ones, prevails on all the soils. Red and white clover, trefoil, with common hay seeds, not of the best sort, and sainfoin on the lime-stone soils, are cultivated as grasses. The common rotation of crops, on the drier soils, is: 1st. turnips, 2d. barley, 3d. clover or beans, 4th. wheat; on the wet or clay soils, 1st. fallow, 2d. wheat, 3d. oats, 4th. wheat; sometimes the course is, 1st. fallow, 2d. barley, or oats, 3d. clover or beans, 4th. wheat; which is generally esteemed the better course; in a few instances, potatoes and cabbages are cultivated in lieu of turnips.

Summer fallowing is universally practised on the dry soils; and good spring dressings on the drier ones, for turnips, &c. Turnips are generally sown broadcast; but the expertness of our hoers sufficiently compensates for the want of drilling. That excellent mode of cultivation, the hoeing of turnips, has been practised in this part of the country upwards of thirty years; being introduced about that time into the township of Wath upon Derne, by that excellent cultivator, Wm. Payne of New-hill Grange, my late honoured father; as it was to the county, by that truly patriotic nobleman, and benefactor to his country, the late Marquis of Rockingham. Yet I am sorry to observe, this most beneficial practice is still much neglected in some parts of this Riding, particularly in the neighbourhood of Thorne and Hatfield.

The manures used here are, 1st. farm-yard rotten muck; from eight to twelve 3-horse cart load of which are applied to the statute acre of fallow; 2d. ashes, about eight loads per acre; 3d. root, chiefly as a top dressing for wheat, from twenty to thirty bushels per ditto; 4th. Bone dust and horn shavings, from three to five quarters per ditto; 5th. dove manure, ditto; 6th. soap ashes, ditto; 7th. rape-dust, ditto. Lime is generally employed as a manure for the first fallow after an old lay, apparently with success, at the rate of two or three chaldrons per acre. My own practice for turnips is, one chaldron of lime well mixed with the soil, and six loads of fresh muck, or three quarters of dove manure per acre, with full success; this compound manuring, I think, insures its due operation on the soil in most cases better than the simple one, and has many other advantages. The sheepfold is not used here, except on turnips, which are generally eaten on the land by sheep.

The common sort of both broad and narrow wheeled carts, with three or four horses, are generally used, with a few one-horse carts; scarcely any other plough is seen than the common single one. The work is almost entirely performed by horses; very little use is made of oxen at present; though where they are employed, they are found to answer very well, and I have no doubt of their superiority over the heavy draft horses in point of *real* utility to the farmer. I have used a pair of oxen several years in harness like that of the horses, working them at the plough and on the road, in every respect as we use our heavy draft horses; and as far as I can judge, they are equal to them for *use*, though the pride of the drivers will never allow it. However, in the stage of fattening them, we are all agreed, that *their beef* is preferable to the *carriage* of an old horse. The advantage to the community of working oxen on farms is beyond dispute, or calculation.

A considerable proportion of the arable land is uninclosed, to the great obstruction

of agricultural improvement; the advantages of inclosing are numerous and important. The liberal occupier of *inclosed* land, whose mind is actively employed in the improvement and increase of his produce, with whom innovation has no fault, but when it is useless, this man on *inclosed* land has not the *vis inertiae* of his stupid neighbour to contend with, before he can commence any alteration in his management, that he is clearly convinced will be to his advantage; he is completely master of his land, which in its open state is scarcely *half his own*. This is strongly evident in the cultivation of turnips, or other vegetables for the winter consumption of cattle; they are constantly cultivated in inclosures, when they are never thought of in the open fields in some parts; and I know no township in this Riding, except that of Wath upon Derne, where the turnips are cultivated in any degree of perfection in open fields. At that place, they have long been wisely unanimous on the management of their common fields, and in selling the whole turnip crop by a valuation to a person engaging to stock them entirely, with sheep on the land: but even *there* they cannot apply their own produce to the improvement of their *own* stock, nor have they it in their power to vary their management by the introduction of any grasses for more than one crop in their rotation; both essential articles, when the improvement of live stock, particularly sheep, is in contemplation; this argument for inclosure might be very amply dilated on, were I writing a treatise instead of a letter, for it is clearly of importance to the cause.

Common fields are frequent; the difference of value at present between common field, and inclosed land of similar quality, is about one-third greater in favour of the latter; but if the spirit of improvement was a little more awakened, this difference would be greatly increased.

There are large tracts of waste land in the neighbourhood; I may extend this remark to the whole county; lands now utterly lost to the community, even in this rich and populous Riding; and be it mentioned to the utter disgrace of every thing in the country, that after a long period of years, in which this island has depended on foreigners for a part of its necessary consumption, these lands are still waste; they are a complete nuisance to every occupier, who has the misfortune to border upon them; whose inclosures are certainly exposed to the inroads of their pining inhabitants, which you scarcely *guess* to be *sheep*, but for the bits of ragged wool they carry on their backs; the *feats of activity* of these animals are such, that no fence can prevent their performing them. These wastes are certainly capable of every improvement by inclosure, which is their *sine qua non*.

The rate of wages is low, the price of necessaries considered; and hands for the purposes of agriculture, in its present imperfect state, are not wanting.

Paring and burning are practised generally on the breaking up of old lays, the expence of which is from 16 s. to 21 s. per acre.

Proper attention is paid to the draining of *arable* lands, but I cannot so fully answer for it in other respects.

Few leases are granted, and I rather think few are asked for; the nature of the covenants between landlord and tenant, has a general reference to law and custom, which secure to the landlord quiet entry on due notice, with recovery of damages if any be done to the farm; and to the tenant on quitting, a fair valuation of his property and labour, in the ground; as fallows, crops, manure, &c. &c. being part of his

stock in trade. It is an article essential to a good and spirited agriculture, and which cannot be too much insisted on, that the farmer be scrupulously allowed on quitting his farm a fully and fairly appraised valuation of his *stock in trade*. It forms a security and bond of entire confidence, equally to landlord and tenant, a security which sets all leases, parchments, bonds, and seals at defiance; it secures to the landlord the payment of his just demands, with a certain improvement of his estate: and to the *tenant* an easy mind, under the application of his ingenuity, industry, and cash, to the prospect of increasing his produce, and ameliorating his farm. I wish this matter was more attended to; I have seen many painful deviations from justice in this respect, to the great injury of the *cause*. An act of the legislature might probably extend this *real* benefit, and promote the improvement of the lands already inclosed, more than *millions* expended in the way of premium, &c.

There is no other obstacle to improvement but the payment of tithes in kind; an obstacle, the effects of which upon agriculture might be much diminished, if not *entirely removed*, if the Members of the Board could unite their labours in so important a cause, with a sincere zeal and regard for justice, and the religion of Christ. The obstacles to the improvement and inclosure of waste lands, in many places, amount nearly to a *prohibition*; viz. 1st. The tithes, the dislike of which, with the freeholders, &c. makes a very difficult commutation, the absolute condition of their concurrence. 2dly. Manorial claims and powers. 3dly. The heavy expence and trouble of obtaining acts of the legislature. To which may be added, the caprice, *partial* interest, and disinclination to all improvement of some of the claimants in many cases. All these obstacles might be much lessened by a law, specifying and *explaining* the claims, and *limiting* the *powers* of tithe and manorial proprietors, in such manner, that *their simple opposition* should not hang in *terrorem* over the very threshold of every such inclosure; and also *facilitating* and *encouraging* such applications to the legislature; perhaps a general act of inclosure upon a good plan might be a wise and seasonable measure to liberate the *active improvers* from the torpid dominion of indolence and stupidity; however the government can scarcely do wrong in this matter, except by *suffering* the *wastes* to remain as they are.

Entirely owing to one or all of the obstacles I have mentioned, very few indeed of inclosing bills have passed these twenty years, in the whole district comprised between the towns I mentioned above, notwithstanding the value of the lands, and the great scarcity and smallness of farms; in the few instances that have occurred, their beneficial consequences to the stock of public industry and produce have been conspicuous.

No. VI.

EXTRACTS FROM A LETTER WRITTEN BY A FARMER IN THE
NEIGHBOURHOOD OF PONTEFRAC—DATED DEC. 14, 1793.

GENTLEMEN,

THE land betwixt Doncaster and Ferrybridge, is chiefly lime-stone, or gravelly soil. All along the road there are many open fields, which are capable of great improvement, by inclosing, sowing grass-seeds, and pasturing with sheep.

The present tenants are in general poor, and the farms small; poverty causes a kind of stupidity to take possession of them; and I have often spent my time in attempting to convince them of their errors; but though many of them may be convinced, it is not in their power to get out of the old mode, for want of the one thing needful.

The lands I allude to, are chiefly in tillage, the labour of which, and the necessary manure eats the poor tenant up. I beg leave to refer you to the letter above-mentioned for my opinions upon this head.

Westward of this road, we have useful land, that can feed cattle and breed good sheep. Mr. Sayle has done much good in these respects; some of us are following him as fast as we can in the Dishley breed; but he has got the lead, and I wish him success, for he deserves it.

Common hay-seeds are going out of fashion with the best farmers, and clovers and rye grass daily gain ground. Sainfoin is very useful in barren or poor lands, and in good seasons, as great crops of it are produced, as we can have of other grasses upon our most fruitful soils: happy it is for the occupiers of such land, it was found out. We have a very indifferent breed of cattle. If gentlemen would send good bulls amongst their tenants, and let them serve their cows *gratis*, it would, I think, be the only probable means of attaining success in this most essential point.

There is no land watered here, but many situations are well adapted for that purpose. I myself have 30 or 40 acres, which I have long wished to float, but as I have no lease, the expence deters me. I have been at Dishley several times, and am well satisfied as to the utility of watering grass land. I have had thoughts of applying to Mr. Bakewell for a man to superintend the work. He is so great a friend to the public, that I make no doubt but he would readily do any thing to forward such improvements; but as I have already said, the expence deters me.

M

The succession of crops we have after fallows, is barley, clover, and wheat. Turnips are taken wherever the land is proper for them; but we have not much of that kind hereabouts. Upon strong lands, we sow wheat after fallow, then beans, and conclude with wheat or oats. Tares are now coming in fashion.

Oxen are not much used for work here, and never will become general; they are thought too slow by the active farmer; though I approve much of them, thinking the question of them, and horses, to be an essential one, as *Mr. Cully justly observes*.

There are many fields open over the country, which would be far more valuable if inclosed; also several common wastes, to which the same observations will apply.

The advantages arising from inclosing are obvious, by an increase of labour, and an increase of food, both of which are for the public good. It produces disadvantages to none, unless it be a few individuals. In the village where I live, and where we have had no inclosure bills, the increase of poor's rates has been incredible. I am not very old, and can remember the time, when we had only one poor woman upon us at 6d. a week; but for these some years back, the expence of supporting the poor has been from £150 to £180 a year; and this chiefly paid by tenants not renting above £1,000 all together.

Wages are much advanced. I have two labourers, which cost me not less than £60 a year: in short, the expence of labour is become unsupportable. Draining is used often among us; perhaps more might be done if it was not a heavy expence. Paring and burning are also used, and are without doubt an excellent practice on some lands. I have no notion it wastes the soil, which is the chief objection our young agriculturalists have against it. The expence is from 20s. to 28s. per acre.

The modern farm houses, and offices, are much superior to those formerly built. I would have every farmer reside in the middle of his farm; and every house and homestead built in an uniform and convenient manner.

Leases are not universal enough for the encouragement of experimental agriculture; and the nature of the covenants is according to the liberal or illiberal disposition of the landlord. One will smile upon the arts, and lead rural industry by the hand, whilst another casts a damp upon the honest heart by oppression, and clips the wings of rising genius.

With regard to improvements, some have the will but not the power to make them; others the power, but not the will. Nothing but numerous and repeated examples can influence the ignorant and stupid. Those who have the inclination, but not the means, should be assisted by their landlords, and pay poundage for it. Where land is to be watered, this should particularly be the case, for it will enable the tenant to pay interest with a smile.

Cabbages might be grown upon many lands improper for turnips; and if planted with intervals of four feet, as at Dishley, the ground would be kept clean at little expence. I have found them exceedingly useful. No land should lie dormant for a year; and if no man ploughed more than he ought, he would always be enabled to turn his fallow brick to some useful purpose.

No. VII.

As many disputes often arise in dividing common fields and waste lands, about the extent of manorial rights, and also about the extent of the claims of those who have servitude upon them, we here insert some decisions of the Scotch Court of Session, given in consequence of the act 1695, for dividing commons; which we have been favoured with by Mr. JOHN CRAW, Writer in Haddington.

IN the division of commonities between a proprietor, and others having servitudes, the proprietor ought to have a fourth part allocated to him, *tanquam præcipium*, as the value of his property, and the remainder ought to be divided proportionally, conformably to the act 1695, amongst the neighbouring heritors, who have possessed the same as commonity, allowing the proprietor likewise a share in that division effeiring to his lands, whereof the tenants had promiscuous possession with the heritors of the dominant tenement. Home, 7th Jan. 1724. Hog.—In this case the suit was at the instance of a fewar. But in a process of division of the commonity of Bigger, at the Earl of Wigtown's instance against his fewars, some of whom were conjunct proprietors of the moor, others had only servitude of pasturage upon it; it was objected against the *præcipium* by those who had servitudes, that the rights were derived from the pursuer's predecessors, and were a burden upon his property; that there was no foundation upon the act 1695 for pursuing a division, unless in the case of common property, that the defenders must be allowed to enjoy their servitudes as stipulated to them; that the proprietor was impowered to confine them to ground sufficient for their servitude, but that further he could not go. The lords found the defenders having rights of servitude are entitled to have a proportion of the commonity set apart to them, equivalent to these rights, 23d Jan. 1739. Wigtown.—In a process of division upon the act 1695, at the instance of a superior against his vassals, to whom he had granted servitudes of common pasturage on a moor which was his property, it was found, that the act gives no title to sue a division in this case, 1st Feb. 1740. Stewart.—In a process of division upon the act 1695, of a common property belonging to two neighbouring barons, the rule of division was found to be, not the value of the tenements that lay contiguous to the commonity, but only of the tenements which had been in use to the pasture there. Nov. 6th, 1739. Dalrymple.

The owners of dominant tenements are not entitled on the division of the servient moor, to have any share of the property; but the surface may be divided. Falc. Vol. I. p. 336. Stewart, 3d June, 1748.

Lands, of which a moor is pertinent as common property, are entitled on a division to a share effeiring to their valued rent, notwithstanding they have also pasturage on another moor. *Falc. Vol. I. p. 352. Sharp, 16th June, 1748.*

The proprietor of a barony is only entitled to a share in a common, effeiring to the valued rent of such of his lands as have possessed the common, and not to the valued rent of his whole barony. *Fa. Col. Vol. I. p. 68. Moncrief, 15th Dec. 1752.*

In the division of a common, the possession of part of a barony was found to preserve the right of the whole barony, where the whole had formerly been in use to be possessed. *Fa. Col. Vol. II. p. 100. Balfour, 23d Nov. 1757.*

Common.—A division may proceed so as to affect servitudes, when there is but one, or one and a nominal proprietor. *Fa. Col. p. 348. Barclay, Maitland contra Lambert, June 28th, 1769.*

Common.—In the division of a common, the sole proprietor was found not entitled to a *præcipium*; but his right was reserved to coals, and other minerals under ground, and to that part of the common that remained, after the respective shares had been allotted to all the parties having interest. *Fa. Col. No. 38. Henderson contra Macgill. Feb. 21st, 1782.*

No. VIII.

The following **EXTRACTS** from two letters, written by a farmer in the West Riding, contain so much natural good sense, expressed in forcible language, upon the obstacles to improvement, and the means necessary for rectifying the practice of husbandry in that district, that we have given them a place. At same time we beg leave to observe, that this gentleman's sentiments, so far as they go, are nearly similar to those we have formed in consequence of our survey.

BEING desirous to encourage an undertaking which has for its object the improvement of agriculture, and of course the general benefit of the public, I have ventured to communicate my thoughts to you upon some of the most important obstacles to that useful science, which I thought might be more clearly done upon paper than in the short time I had the honour to spend with you. I will begin my observations upon the third of your queries. The lands in this part being chiefly occupied by small

farmers, they are deprived of making that improvement which a man of property, with two or three hundred acres of land, can do. A small farmer, not having room to change his land from tillage to seeds, and pasture with sheep, which is the grand improvement of the land in this part, he lets a small portion lie in grass, to keep his milk cows and horses, and the rest perpetually in tillage, excepting now and then a little broad clover. By this method it gets wore out, requires a heavier dressing of manures, more working by the plough and harrows, and becomes so fixed and cemented together (the greater part of our land being of a clayey glutinous nature), that it is deprived of receiving the benefit of the sun and air, which is the principal life of vegetation; whereas by laying down with red clover, and white and yellow clovers alternately, and occasionally a few grass seeds, the soil is kept in a freer state. The fibrous threads of those seeds running among the soil, communicate the warmth of the sun and air in every part, render the soil more malleable, easier to work, and in a better state for the reception of any kind of grain. These advantages it receives from the culture of seeds, exclusive of the *rest and manure*, which is scattered upon it by that most provident of all cattle, sheep, as great a portion of which I should recommend to be kept upon every farm as is consistent with this mode of management. They enrich the soil more than any other cattle; and give employment by their fleece, and the most approved food in their carcass, to our manufactures. Another obstacle to improvement here is, that a small farm is not worth the attention of a man of ingenuity and property; and this, together with the refusal of leases and arbitrary clauses, prevents men of property from educating their sons in this line of business. Every man therefore that experiences these oppressions, and who can give his son a fortune to stock 150 or 200 acres of ground, if he is a lad of genius, puts him apprentice either in the mercantile line, or some of the genteel professions. I know this sort of reasoning will draw upon me many enemies; and it will be objected, that by laying a number of small farms together you will depopulate a country. Far be it from me to deprive any man of his property, or to wish to do any thing that may tend to decrease population: on the contrary, it is my wish to promote it; convinced that the riches of a country depend upon it. I would not deprive the old farmers of their land; I would have them educate their sons in the useful manufactories, and as they die, lay them together, or convert them into manufactories where *properly situated*, and lay a sufficient portion of land for their convenience: and the rest lay together for the purpose of farming. Four farms, of 50 acres each, laid together under proper management, would be made to produce one-fourth more for the public market than in separate allotments; and I think it will be generally confessed, that in a country like this, abounding with men of property, ingenuity, and enterprize, that there generally will be found employment in our manufactories for as many inhabitants as there can be found provisions to support; consequently more land is made to produce, and more it will tend to increase population. I shall next beg leave to repeat my method of management; which, though you have seen, and I verbally communicated to you, I think may here be more clearly described.

Upon sand land, loamy, sand, or dry hazle soils, I cultivate turnips dressed with bones, mixed with a portion of fold manure, as communicated to you; next barley, red clover, and wheat; then turnips, barley, white and yellow clovers, pasturing with sheep one or two years; then wheat, and so on. Upon clay and wet soils, after

fallow, wheat, red clover, wheat or oats, then fallow, wheat or barley (if the fallow be limed we always sow wheat; if fold manure, sometimes barley, as I change the tillage as much as possible), next small seeds as above, mixing a few grass seeds, and pasturing with sheep, one, two, or three years as convenient, or apparently most useful. I then plough out for wheat or oats; if laid more than one year, oats. I have found this, from 20 years experience, to be the most beneficial method of cultivating land; having brought some poor soils to considerable greater value within that period. The farm I occupy is but small, 150 *statute acres*, and, though as well managed 20 years hence as any in the circuit, and as heavily manured, did not then feed more than 20 sheep upon grass, and 40 upon turnip, upon an average. I can now fatten 60, sometimes 80 upon grass, and 100 or 120 upon turnip; and get one-fourth more corn than was formerly raised, besides some increase of other cattle. Here, however, ought to be understood the great expence I am at in artificial manures, these adding to the natural ones in a very considerable proportion. Last year I spread on eighty pounds worth of bones, forty pounds worth of lime, and ten or twelve pounds worth of soot and rape dust upon this small farm, besides the natural manures it produced: and upon an average it costs me at least £100 per year in different sorts of tillage. This ought to be considered as a principal means of improvement, and is more by one half than is bought upon an average by the general run of farmers.

I come now to speak of the necessity of leases, which, with the forementioned thoughts on small farms, will give answer to your 35th question. The greater part of this country is either tenanted at the will of the proprietor, that is, from year to year, or upon leases clogged with arbitrary clauses, such as being restrained from ploughing out certain pieces of ground under heavy penalties, or confined in some measure to one mode of management, which restrains the genius of the farmer, and ties him from experiments and every useful improvement. There may indeed be a few men found, who will exert their abilities and risk their property under a yearly farm, yet the generality will not: for out of the whole of my acquaintance (and I know a great number of clever farmers), whenever I have asked them, why do you not manage such a piece of land so and so, how much more would it be made to produce? The answer always is, we are tenants at will, and fear advantage would be taken of our improvements. This, I presume, will appear to every one a natural conclusion.

There are two clauses which I think necessary in this country where tillage is so dear, where they are at an inconvenient distance from great towns that manure cannot be placed, and that is, to be restrained from selling of the hay and straw from the leases; and four or five years previous to the end of the term, to lay down one-third of the ground in a good husbandry style. These, in my opinion, are all the restraints necessary for the security of the proprietor, and, I think, would not militate against the farmer's interest, but leave him at full liberty to pursue his improvements. Some husbandry, which was more practised some time past than at present; for I found, that where lands have been long under the plough, and often dressed over with it (which has been the general practice for a century past), it has very little effect. The old farmers used no other tillage, till very lately, but what was made in the farm-yard, and many of them no other yet, always liming their clay land fallows, sowing wheat, next oats, beans or broad clover, and again wheat. They have fallowed and limed, again and again, for 30 or 40 years together, laying on the

rate of about 120 bushels of Knottingly stone-lime upon an acre, which will be two 4-horse cart loads. This stone is brought from near Pontefract, about 15 miles by water. Since we got the navigation, it is burnt by the river side, about 3 miles distance from us: it costs at the kiln about $4\frac{1}{2}d.$ per bushel; the expence of conveyance from the kiln to the land (to average a circuit of six miles) will be about $1d.$ per bushel, and the expence of watering and spreading nearly $\frac{1}{2}d.$: so that the whole expence will be about $6d.$ per bushel, or $\pounds 3.$ for a statute acre. This is collected during the summer, and spread on at any convenient time, a little before wheat sowing.

But in my opinion, this time is too late, as I find the sooner it is spread on in the spring, and the oftener it is ploughed afterwards, the more intimately it gets mixed with the earth; having perfectly absorbed its own air and water, the better it fertilizes the soil, and fits it for the produce of a crop. The season of laying it on is not however regarded by the generality of farmers, nor scarcely any other property respecting it, but convenience for their other employments. The most improved method I am acquainted with, and which I find to answer best, is to lay upon clay soils about 180 or 200 bushels of Knottingly stone-lime upon an acre. This stone, upon being analyzed, is found to be mixed with a strong sand, about one-third of its weight (for we have two sorts of lime of very different properties). The earlier in the summer it is laid on, the better, for the fallow to receive a few ploughings afterwards. It also answers best to be laid on the first fallow after seeds, as the fresher the land, the greater its effects. I think it not prudent to lime two fallows together, except there has been an interval of rest, and other manures spread on in the mean time; nor do I find it answer upon old ploughed wore out soils. Hence arises the philosophical opinion of some ingenious farmers, that lime, possessing neither oils nor salts, acts only as a stimulus or forcer to other manures, bringing such vegetative qualities, as are in the soil, into more powerful life and activity. Upon dry land that is proper for turnips, I lay 80 or 100 bushels of Emsall lime per acre. This is mixed with a strong clay about the same proportion, as the other of sand; there is some cautilus quality mixed with this lime, that if too great a quantity be laid on, instead of assisting it, destroys vegetation: but about this quantity is helpful, it stiffens the straw, makes it stand firmer at the root, and heavier in the ear. I do not use this as a complete, but only an assistant dressing betwixt fallows; laying it on in the autumn before the last crop before fallow, as soon as possible after the preceding crop is reaped. I then plow down and sow with either wheat or oats, to either of which it is helpful, and the following year will be more serviceable to the turnip crop, than if spread on the same summer. This lime costs about the same price as the other. It is to be observed, that these lands are kept altogether fresh by being sown with seeds, and pastured with sheep every other fallow; and always dressed with bones or fold manure, or both, for turnips.

The sheep that are kept in this extensive county are as variable as the soil and climate, and in some degree suited to each. Most of them have made, and are yet capable of great improvement. Those bred above Peneston are well adapted to those uncultivated barren mountains, where they have little to feed upon but ling or heath, and are perhaps the least capable of improvement of any other: but as you have seen them, I need not be particular in describing them. I imagine their fleece, taking ewes, wethers, and hogs, together, will average about $2\frac{1}{2}$ or 3 lb. which will be worth

2s. 6d.; of late years a little more. Those bred upon York wolds are very numerous, and far the best in the county. It being a dry, flinty, lime-stone soil, and capable of cultivation; by growing turnips for their winter support, they raise some of them to good weights, 27 or 28 lbs. per quarter when fatted. Those farmers occupying large districts of land, can keep great flocks, which makes it worth their attention to improve them, and great improvement some of them have made by crossing with Bakewell's rams, and breeding from the best Northumberland ewes. This has rather decreased the weight of the fleece, but improved the staple, and given them a property to feed much quicker and fatter. Those sheep will weigh when fat, from 14 to 25 lb. per quarter, in proportion as they are supported with food; and the fleece upon the best walks will average 6 lb. or better, which this year is worth about 4s. those on the poorer walks from 4 to 5 lb. worth from 2s. 6d. to 3s. 2d.

What are bred in this neighbourhood upon waste grounds are of small consequence. They are the worst in the county, being bred from all sorts; and belonging chiefly to poor people, in small lots of 10, 15, or 20 each, will never be bettered till the lands are inclosed. We have a few gentlemen farmers begun to breed from Northumberland ewes and Bakewell's rams, which I think, makes far the best and most profitable stock; but for want of room, nothing of consequence can be done here in the breeding line. The chief practice of our farmers is to buy ewes at Peneston, or from York wolds, or Northumberland, at Michaelmas, fatten the lamb in the spring, and the ewe afterwards, changing every year. Being near a manufacturing country, full of opulent tradesmen and merchants, lamb always bears a good price, being worth 6d. per lb. nearly, on an average, all spring and summer. Where there is room to breed a few of our own best ewe lambs every year of the above sort, to keep up a stock in proportion to the size of the farm, I believe it most profitable, as stock bred upon our own soils, if of a proper sort, will fatten their lambs and themselves too, much sooner than those brought from any other part. The fleece of these, where gentlemen have brought them to tolerable perfection will be 6 lb. average, and 4s. 6d. or 5s.

In respect to horses, very few are bred in this neighbourhood, scarcely any for sale. The farmers and manufacturers breed a few for their own use; as such every man gets of a sort that is most likely to be adapted to his own business; some galloways, worth at 5 years old, from £10. to £15. some half bred horses, fit for either plough or saddle, about 15 hands, worth, at 5 years old, from £18. to £25.; and a few of the heavy black ones, which will be worth from £25. to £30. if free from blemishes: those will get to 16 hands high. But the East Riding is the circuit for horses: there the best road and coach horses are bred in England, and of any price almost, from 20 to 60 guineas at 5 years old. This circuit is by no means adapted to the breed of horses. Sheep is my favourite stock, with a few good short horned heifers, of the Northallerton or Darlington sort.

In respect to the value of land, it is a very dubious question to answer. We have much let for the convenience of trade; but I shall only speak to that let for the purpose of farming. This is rented from 7s. 6d. to 40s. per statute acre, subject to every other incumbrance, which, in some places from tithes, poors rates, high-ways, and other taxes, is very considerable. Where they have a manufactory amongst them, the poors rates only will be 4s. in the pound rent. I think more than two-thirds of my neighbourhood is of a wet clayey nature, unfit for turnips. The average rent of

these lands may be about 15s. per acre. and the dry turnip soils about 24s. per ditto. As to the produce, good farmers will average from 27 to 30 bushels of wheat per acre, 40 or 44 bushels barley, 64 or 70 bushels oats, and 30 bushels beans. Small farmers and indifferent managers, which occupy, I suppose, 3-fourths of our lands, will not average more than 20 bushels of wheat, 30 bushels barley, 48 bushels oats, and 20 bushels beans. Thus have I communicated to you my opinion upon your different questions to the best of my knowledge, observation, and experience; and where I have erred, it is an error in judgment, which I should be glad to be corrected in. You are at liberty to make use of my name in any way you think proper: for though I should draw upon me the reproach of the haughty and ignorant farmers, I regard not the censure of such narrow and contracted minds; conscious that it is a duty which every man owes to himself and mankind, to exert himself for the public welfare, and being convinced that nothing is more necessary, nor can tend more to promote the general interest, than the object you have in view. You have therefore my sincere wishes for its success. I am, &c.

No. IX.

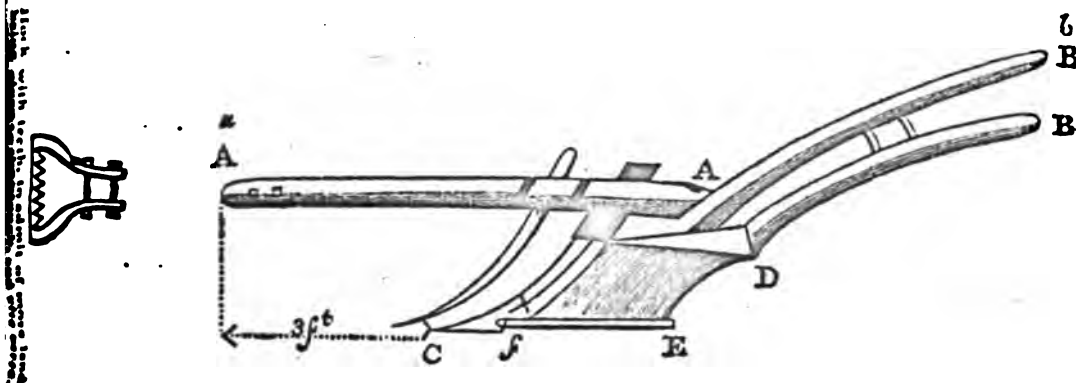
ACCOUNT OF THE ROTHERAM PLOUGH, BY JOSHUA WALKER, ESQ.

AT CLIFTON.

THE following is the general outlines of the history of this useful implement of husbandry.

It was invented by a Mr. Joseph Foljambe of Eastwood, near this place, about seventy years ago, for which he took out a patent; he afterwards sold the patent right to a Mr. Staniforth, of Firbeck in this neighbourhood, who at first gave the farmers the privilege of using his ploughs for 2s. 6d. each; he afterwards attempted to advance them to 7s. or 7s. 6d. but this not meeting with the approbation of the farmers, a combination took place, and the validity of the patent was contested and set aside, upon the ground of its not being a *new invented plough*, but a *plough improved*. Since the first introduction of this plough, the only improvement on it has been the lengthening the head or sock, which keeps it steadier to its work; a certain indication that the inventor or improver of ploughs had well digested his plan before he made it public. The ploughs in use, before the introduction of the new one, were such as are now used in that part of this district called the Levels, between Doncaster and Thorne, which require four horses to do the work done by two.

The dimensions and construction of the plough will appear sufficiently evident from the following drawing and description.



DIMENSIONS OF THE ROTHERAM PLOUGH.

From the end of stilt B to point of the Share C	ft.	in.	} whole length.
From the end of beam A to ditto of ditto C	7	4	
Length of the beam A A	3	0	
Width of the head in the widest part D	6	0	} bottom working surface.
Ditto of ditto at E	1	4	
Ditto of share behind the wing at f	0	9	
Length of surface on which the plough touches the ground E C	0	3 1/2	
Height from ground to top of beam where coulter goes through	2	10 1/2	
Width between stilts at the end B B	8		
Height of ditto from the ground	2	6	
Weight of wood and iron work, about 1 1/2 Cwt.	2	11	

As for the dimensions of the carts and waggon in general use here, they are as follows :

Carts with 3 horses, narrow wheels, 7 ft. long : 3 ft. 6 in. wide : 1 ft. 8 in. deep : weight about 12 Cwt.

Waggon with 4 horses, narrow wheels, 12 ft. long, 4 ft. wide, 1 ft. 8 in. deep, weight about 20 Cwt.

The poor rates in the parish where Mr. Taylor lives are about 1 s. 6 d. in the pound. In this parish they are more than double, on account of the number of poor in the town of Rotheram, and those thrown upon the parish by the manufactories and collieries.

No. X.

EXTRACTS FROM THE CORRESPONDENCE OF MR. PARKINSON, AT
DONCASTER: ADDRESSED TO MR. BROWN.

I n answer to your request concerning the sheep-farming; of this neighbourhood;—a great part of this country is not proper to breed upon, yet sheep ought to be kept by every farmer for improving his land; and in my opinion the most profitable way is to buy draft ewes in September, and to feed their lambs; after that, keep on the mothers till fat. As our clay soils are liable to rot sheep, by floods, &c. the farmer, by this method, will not run any risk; for if his sheep take the rot, they will, if managed properly, be ready for the butcher at all times. The turnips upon the clay should be eaten early in the season, to make the most of them, and those upon the lime-stone and sandy soils afterwards.

I will now describe the kind of sheep proper to be bred on the sand and lime-stone farms; and these, I think, are the Dishley, or as they are commonly called, the Bakewell breed; the properties of which are well known. Their wool may be considerably improved; it being in general of too short a kind, and producing various sorts in one fleece: viz. mossy on the back, hairy on the thighs, or breech, and fine and soft on the shoulders and necks, which causes one part to be sold at Bury St. Edmunds, and the other at Halifax, to make the most of it.

It is the opinion of some, that long wool injures the carcass: I do not believe it, or at least it is scarcely perceptible; therefore I would have the wool on these sheep to be of a fine combing quality, nine or ten inches long, bearing a very even top, as that prevents both loss of wool and labour, by not having the tag end to cut off. The weight of the fleece to be from eight to twelve pound, if properly fed, if not, it will perhaps be only from five to seven pound. The carcass to weigh from 20 to 25 pound per quarter with common food; extraordinary feed, from 25 to 40 pound.

We have a sort of sheep from Northumberland that feeds well, and pays a great deal of money. I had last year 20 ewes from that country: bought them October, 1791, put them to a Dishley tup, and kept them on till December, 1792.—Profit as follows:

	£.	s.	d.
Sold the wool for	-	-	-
27 lambs, at 18 s.	-	24	6 0
4 ewes, at 50 s.	-	10	0 0
16 ditto, at 45 s.	-	36	0 0
		<hr/>	
		75	6 0
Prime cost	-	24	10 0
		<hr/>	
Profit	-	50	16 0

This year I have 30 ewes which are not yet sold. One of their lambs, aged four months, weighed 16 pound per quarter; which sold in Sheffield market at $5\frac{1}{2}$ per pound, or £. 1 13 s. 1 d. besides skin, &c.

The sheep at present bred in this country, I mean those bred upon the commons, are not worth describing. Their fleeces weigh from one to five pounds, but very few so much. The carcass will feed from nine to fifteen pound per quarter—general run about twelve pound. It is my opinion, several thousand pounds are annually lost in the neighbourhood of Doncaster, for want of a more improved breed of sheep.

I think the Dishley sheep are generally too small: their bone and shape are beautiful, but their skin, or pelt, is too thin for bearing the cold. They can neither stand the extremities of heat nor cold; and it is sometimes found necessary to clothe them, where this breed is newly introduced. The wool of the Northumberland sheep stands in need of great improvement: upon many of them the staple is much too short, and some carry a hairy sort of wool, not profitable. The carcass, though not so inclined to feed as the Dishley sheep, yet being far larger, pays very well.

The Durham, or Tees sheep, if improved, might pay very well; but from what I have seen, I think little attention has been paid to them, every flock being of various sorts, both in respect of wool and carcass. There is a number of them pretty good, but a greater number not so. I am of opinion, a careful and knowing observer of sheep, would raise a fine breed from the Dishley ram and Tees ewes. Sheep are an animal difficult to bring to perfection, as both wool and carcass are to be attended to; but one thing I am clear in, that the best carcasses will produce the best wools; like as good land affords good grain.

It is too often little considered how much may be raised from land under good management. It appears to me, that it would be a good scheme for the Board of Agriculture to take a farm into their own hands, and shew by improved practice what might be done: this would be of great utility. As to driving any thing into old farmers, it is easier to make new ones. There is land near Doncaster now let at 7 s. per acre, which, if managed in a proper manner, and fed by sheep, would pay 20 s. and where the sheep that are bred never sell higher than 12 s. or 16 s. might be fed to 30 s. and 40 s.

The usual produce per acre, where a rotation of turnips, barley, clover, and wheat, is adopted, is as follows:

Upon poor sands, $3\frac{1}{2}$ quarters of barley, 2 of wheat:—turnip and clover precarious. Upon clay soils, 4 quarters barley, 3 quarters wheat, 3 quarters beans,—clover and turnips both good. Upon lime-stone, 4 quarters barley, 3 quarters wheat, $2\frac{1}{2}$ quar-

ters beans,—clover and turnips good. Loamy land, 5 quarters barley, $3\frac{1}{2}$ quarters wheat, pease 3 quarters,—clover and turnips good.

The mode of cultivation, however, is very irregular: as the farmers have no leases, they make hay when the sun shines, and often crop the ground as long as it will carry. I know a great many farmers who keep their land in a poor state, to prevent the owners from advancing it.

Draining very little known in this part of the country. The wet lands improveable; but the dry lands much more so.

With regard to the poor sands betwixt this place and Bantry, which are at present in a very shabby state, my opinion is, that the best way of going to work with them would be, first to begin with a good turnip fallow, and 10 loads of manure, of two tons each to the acre, which may be had at Doncaster at 5 s. per ton, as they have scarce any themselves. This will produce a good crop of turnips, which ought to be eat off with sheep, and the land sown with barley and seeds—quantity of seeds, 1 peck of rye grass, 14 pound white clover, and 14 pound trefoil. I would pasture it with sheep for two years, break it for wheat or rye, and return to turnips. My reasons for this are; rye grass is a very good winter plant, and scarce can be eaten too near in the spring, when grass is of most value. If it run to a bent, it exhausts itself for that season, and is worth nothing till autumn. Trefoil is more early than white clover; therefore, with these mixtures, three different springs are got. Many farmers like red clover; I do not, except for cutting, and I think it much the better of a little rye grass. Red clover, on many soils, stands but for one year, therefore is very improper seed for pasture, which those sands should be applied to as much as possible, to fasten them. All artificial grasses should bear two years eating at least, the expence of seeds being great; but none will scarcely bear more than three years. No poor sand or lime-stone ought to be pastured longer than it will keep a sufficient number of sheep to leave a good top dressing when ploughed up; by reason the land is then losing what was put into it before, and returning to its natural state. In time, a hot-bed will come to earth. Manure, mixed with soil, causes fermentation in some measure, like yeast put amongst wort, and will soon go off, and cease to operate.

The land in its present state of cultivation lets high; though worth double the sum if properly managed. Sheep are much wanted, as there is no improvement equal to the sheep-farming: it is both the cheapest and best upon all dry soils. If the farmer could only be made to understand he had a sort of inheritance in his farm, which can no way be done but by giving leases, it would be of general utility to the kingdom at large. The farmers are the first and the grand machine of all improvements, and therefore ought to have every possible encouragement given them. I never was in any part of the country where the people were more flat to improvement than in this neighbourhood. I apprehend the cause is this, a great many gentlemen live in it, consequently near their tenants, and are curbs upon their ingenuity. Most experiments are costly, and the farmer is afraid his landlord will look upon his attempts to improve as acts of extravagance,—such as hiring a Dishley ram for 100 guineas the season, and other things of the same kind.

There is an absurd idea some men have, that the scheme I have adapted for the sands will diminish the quantity of grain: I say no,—it will only add to it; for an acre managed in the way I have described, will produce as much as two do now. As

for the small mutton and fine wool that would be lost by my scheme, there will always be plenty of the former on the mountains, for the tables of the great; and if lambs are clipped, they will produce fine carding wool, which does away these objections.

No. XI.

During our Survey a Journal was regularly kept, wherein was inserted the whole information received at the different places we visited, which was always taken down, as nearly as possible, in the words of the persons who gave us the intelligence. Considering the great extent of the West Riding, the different qualities of soil, and the various modes of cultivation adopted, the following abridgement of its contents, in which a number of observations daily made by ourselves are included, will, we hope, present to the public as just a picture of the present state of Husbandry in that district, as could well have been accomplished, had any other method been adopted.

OCTOBER 18th, 1793, received our commission from Sir John Sinclair, President of the Board of Agriculture, to draw up an account of the stock and husbandry of the West Riding of Yorkshire, and to inquire into the state of manufactures, so far as they were connected with the agriculture of that district.

October 22d, set off from East Lothian, and arrived at Boroughbridge on the 24th.

Boroughbridge is a market-town, situated upon the great north road, and about half way betwixt London and Edinburgh. It elects two members to Parliament, in consequence of a peculiarly qualified burgage tenure, and was first summoned to send members by Queen Mary in 1553. It is a town of small extent, enjoys the benefit of inland navigation from the river Eure, which passes this place, and is navigable to Rippon. Here we received the following information relative to the husbandry of the neighbourhood.

The land generally belongs to small proprietors, and farms are of various sizes. Soil good; mostly deep loam; and the rent about 20s. per statute acre, besides public burthens, which may be about 12s. more. Rate of wages 14d. per day for winter half year, and 16d. for summer, with extra allowance in hay time and harvest. Wheat cut with the sickle at 5s. 6d. and 6s. per acre. Harvest early; generally over by the end of September. A great part of the land kept in grass. Rotation upon the clay land, two crops and a fallow, and these crops are wheat and beans; the fallow limed with 32 bushels Winchester measure, per acre, and the dung chiefly applied to the grass: upon light land the rotation is, turnips, barley, clover, and wheat, sometimes oats in place of wheat. Mr. Fretwell drills turnips, but the general practice of the neighbourhood, is to sow broadcast: where the soil is proper for it, the turnips are eat upon the ground with sheep, which is considered as most advantageous. Some cattle bred, but not a fourth part of the necessary quantity: those that are bred, are chiefly for cows, the males being killed when calves. Few or no sheep bred. Mr. Fretwell, and Mr. Fletcher buy their ewes from Northumberland: bought them this year at 22s. per head; sold the lambs at 15s. 6d.; and the ewes in autumn, after being fattened, at 29s.; value of the fleece 3s.—about 3½ fleeces to the stone. An acre of good pasture will carry four ewes, and their lambs. Land almost totally inclosed, and the inclosures small. Difference of rent betwixt open and inclosed land, ten shillings per acre. Some waste unimproved common in the neighbourhood, which ought to be divided and inclosed. No land is watered here.

Prices of corn this year higher than usual, but markets in general steady. What corn is more than necessary for home consumption, is disposed of at Knaresborough market, and from thence carried to the western parts of the county. Corns mostly stacked in the fields, as there is found less loss by vermin than in the stack-yard. Some threshing machines in the neighbourhood. Roads in good order. The bye-roads supported by the statute work, which consists of 2s. from each householder, and six days labour of a team of three horses, and two labourers from the farmer for each 50l. of rent, with an assessment of 6d. in the pound upon his rent. Paring and burning is only practised upon the waste lands; expence about 18s. per acre. The first year it is sown with rape seed; produce from two to five quarters per acre, generally about four quarters; price at present thirty guineas per last, but very fluctuating; expence of reaping and threshing about 20s. per acre, if stacked and threshed in winter; but according to the general practice it is impossible to calculate the expence, the whole neighbourhood being gathered to the threshing, when it is done in the field. In this mode it is a perfect feast, where all comers are welcome: but this *good old custom* is fast going out, and the thrifrier practice of stacking it in the yard, and threshing it in the winter, introduced in its place.—The straw of the rape is sold to the soap boilers at about 5s. per acre. The plough used here is of the Rotherham kind, drawn with two horses upon light land, and three upon clay. A ploughman works his horses only; labours generally 10 hours per day, when the season allows. The want of leases one great obstacle to improvement. Most part of the farmers are upon yearly leases, filled with innumerable restrictions; and leases of this kind are as good as none.

From Boroughbridge we proceeded to Copgrove, the seat of Henry Duncombe, Esq. M. P. for the county. Upon the road to Copgrove we passed several common fields, which appeared to be of good quality, but under execrable management. The

far greatest part of the land was inclosed, and the grass very rich; those inclosures adjoining to Mr. Duncombe's house particularly so.

The information received at Copgrove was to the following purport.

Soil in general light, well adapted to turnips, carrots, and other drilled crops. The whole parish of Copgrove possessed by Mr. Duncombe; but there is a considerable number of small proprietors in the neighbourhood. The majority of the farms are small, not exceeding 150 acres. The land is employed both in pasture and tillage; about two-thirds in pasture. Of the tillage part, one-third annually under fallow, and turnips taken upon it. Mr. Duncombe drills a few, but they are otherwise universally broadcast. Two crops of corn allowed to a fallow, and these crops are either wheat and oats, or oats and wheat. Mr. Duncombe's steward thinks it best to take oats first. Mr. Duncombe sometimes sows rape upon the fallow, eats it off in autumn with sheep, and sows it with wheat: at other times, after eating it in autumn, let it stand till spring, when it is eat again with sheep, and sown with barley or oats. When land is sown down for grass, if intended only to stand one year, red clover is sown by itself; if for sheep pasture, white clover, yellow clover, and rib grass; and if for meadow, white clover and hay seeds. The stock kept upon the pastures are a mixture both of sheep and cattle. A considerable part of the fallow is limed; the turnips all dunged, and the remainder of the dung laid upon grass. Horses chiefly employed in the plough, being found most expeditious, though a few oxen are also kept. Harvest generally commences about the middle of August, and is finished before Michaelmas. The land is mostly inclosed, there being but few open fields. The value of the land is increased one-half by inclosing; inclosures in general small; average not above 10 acres: inclosing not injurious to population. Some common fields, which are very detrimental both to the proprietors and the tenants. Some waste lands, but not extensive, which might be improved if they were divided. Prices of labour greatly advanced; farmer's servants, by the year, £12 of wages, and victuals; labourers, 1s. 6d. per day, with their victuals in hay time and harvest; hay cut at 2s. per acre; oats and wheat, 6s.; threshing wheat 2s. 6d. per quarter; oats, 10d.; barley, 6d. Some part of the land in the neighbourhood is meadow, but being common, has not been drained, which would prove highly advantageous. Paring and burning greatly practised; of use to break up grass lands in this manner; expence 20s. per acre. Not much wood in the neighbourhood; but the quantity is sufficient to answer the demands of the inhabitants. Provisions high; beef and mutton 4d. and 4½d. per lb. and keep pretty equal for the season. Roads in good order; the bye-roads supported by the statute work. Farm-houses and offices, in general, not well constructed, nor properly situated, and might be greatly improved. No leases are granted. The tenants are mostly under covenants and restrictions; some of which are *detrimental* both to the interest of landlord and tenant. No manufactures here, but a number of cotton mills in the neighbourhood; as they are lately established, their effects are not yet known. No agricultural societies. The Dutch or Rotheram plough is used by Mr. Duncombe.

Arrived at Knaresborough.—Waited upon Robert Stockdale, Esq. from whom we received a great deal of valuable information. The forest of Knaresborough, consisting of 33,000 acres, was divided in consequence of an act of parliament passed in 1770; and his account of this transaction, as published in the Appendix to this survey, will throw great light upon the system by which common lands are at present divided and inclosed.

Knaresborough is a market-town of great antiquity, and formerly a place of considerable strength. It is almost encompassed with the deep river Nid, and strengthened by a castle situated upon a craggy rock, whence the name of the place is supposed to be derived. It has a weekly market on Wednesday, at which great quantities of corn and provisions of all kinds are sold. A good deal of linen is manufactured in this place and neighbourhood; but little or nothing done in the woollen way.

Information received here from Mr. William Bramley, steward to Sir Jo. Coghill, Bart.

Soil about Knaresborough part light, upon a clay bottom, and a considerable part a deep rich loam. The majority of proprietors small, and generally occupy their own land. The fields about the town mostly in grass, and employed in feeding milk cows. The cows are chiefly of the Holderness breed: farther west, they are of the long horned or Craven kind, which are hardier, and answer better for the soil and climate. When land is broke up from grass, two crops of oats are taken, then fallow, which is sown with wheat or barley and grass seeds. Sheep, both bred in the neighbourhood, and bought at the adjoining fairs. Wool sells at about 10 s. 6 d. per stone of 15 lb. avoirdupois, three fleeces to the stone. General rotation of crops;—fallow, wheat, beans, and oats; but some take only two crops after fallow. The fallows are limed, 2 chalders, or 64 bushels to the acre. Turnips often taken for a fallow which are worth £ 5. per acre, when eaten upon the ground; after them, barley. Plough of the Dutch or Rotheram kind, wrought with 3 horses in a line. No oxen used. Wheat sown about Michaelmas, if the season answers, beans in March, or as early as possible, oats in April, and barley immediately afterwards. Land almost wholly inclosed, and supposed to be worth 5 s. more rent per acre than the same soil in open field. Inclosures from 3 to 10 acres. Thinks it would be of great utility to inclose all the common fields; and that inclosing can never have a bad effect upon population. A waste common in the neighbourhood, which might be greatly improved. Planting the waste lands not supposed advantageous; as there were some of the higher parts of the forest planted, which have done no good. Wages high; in harvest 2 s. per day for men, and 15 d. for women. Hours of labour, in summer, from six to six; but in harvest, do not enter till eight o'clock. Paring and burning greatly practised; expence 14 s. per acre. A good deal of wood in the neighbourhood. Provisions plenty; beef and mutton at 3½ d. and 4 d. per lb. avoirdupois. Farmhouses not very good, and stand in need of improvement. A number of leases granted; some for 7, others for 14, and a few for 21 years. Thinks it would greatly promote the interest of both landlord and tenant, if the whole of the lands were under lease; thinks also that covenants, or restrictions upon the tenant, during any part of the lease, except the three last years, are a great hardship, and very detrimental to

good farming. No agricultural societies in this neighbourhood, but the farmers in general seem fond of improvements.

We also received answers to the queries from Mr. Stockdale, where his information agrees with Mr. Bramley; it is unnecessary to repeat it. The substance of his answers is therefore only given.

The soil and climate vary according to situation, exposure, vicinity to rivers and towns; as also to the quantity of lime, composts, and other manures that are used. Farms are in general small, and divided nearly into equal portions of arable and grass; all kinds of clover and grass-seeds are cultivated. A mixed stock of horses, cattle, and sheep are kept upon the pastures, the breeds by no means properly attended to, except by some particular persons. Very little land is watered, but many situations would admit of it. Fallowing practised invariably upon strong soils, and even upon all such as are not friendly to the turnip husbandry. Turnips, when eat by sheep, seldom fail to improve the ground, and secure a succession of good crops; but red-clover, when too often sown, is found not so good a succession as trefoil and white clover, or even beans, occasionally introduced in its stead. Lime is principally used as a manure, when stable-dung cannot be obtained. Compost dunghills are now more attended to than formerly, but not so much as they ought to be. Many of the common fields are inclosed annually, under particular acts of parliament, and by them population has been greatly increased. The extent of waste land is very great in this wapentake, and principally depastured by half-starved sheep, horses, and young cattle; it may be improved in various ways, as the commons in this district differ much in soil, exposure, and other circumstances. The land is not so much drained as it ought to be, the drains are mostly filled with stones, and covered, very few filled with wood or *straw*. If the soil be sound and strong, it is common to turn the first sod, with the grass side downwards, letting it rest for support on a piece of the bottom of the drain on each side not thrown out; this is called a shoulder drain, and in strong land answers well, and is done cheap. Paring and burning is practised, and found to answer well in all sour rushy land, and is done by men, with a push or breast spade. In some parts of the country wood abounds, and where it is attended to, thrives well. The roads are in general good; those are best which are made wide, not too much raised in the middle, and the stones broke small, by which means they unite and bed firmer. The farm-houses and offices, when made in consequence of new inclosures, are usually placed near the centre of the farm, and are well constructed. Few leases are granted, which is to be lamented, as it can never be expected that improvements will be made, where the tenant has no certainty of reaping the benefit of them. The people certainly have a great turn to improvements, and were reasonable leases given, would make a rapid progress therein. The intermixture of property, a great obstacle to improvement. If a general inclosure bill could be obtained, and tithes commuted, it would obviate a great many of the present impediments, and contribute more to extensive and general improvement than any other measure.

We had the pleasure to fall in at Knaresborough with Mr. Bainbridge, steward to Lord Loughborough, from whom we received a variety of important information, made use of in its proper place. The poor's rate is generally 4s. in the pound in this neighbourhood, which raises a suspicion that the funds are either badly administered, or that the laws themselves are founded upon wrong principles. By in-

formation received from other sources, it appeared that a person in the workhouse fares full as well as if he derived his subsistence from his own labour; a method of management inconsistent with sound policy, and highly inimical to virtue and industry, amongst the lower ranks.

Visited Harrowgate; country about that place wild and uncultivated; in the division of Knaresborough forest, a tract of land about 200 acres, was set apart for the use of the company who resort there.

Arrived at Ripley. Sir John Ingilby, a great friend to improvement in this neighbourhood, unfortunately from home. The land here mostly belongs to small freeholders;—farms about 120 acres in extent, but a great deal larger upon the poor lands. Rents, in the vicinity of Ripley 30s. per acre, besides public burthens; about a third of the land kept in tillage, no clover sown, no land watered, wheat and oats the general crops, and two crops to a fallow. One-third of the tillage land annually limed, and 3 chalders, or 96 bushels applied to the acre. Harvest later than in the lower part of the country; nine quarters of Friesland oats per acre, sometimes got upon fresh land. Land all inclosed. Rents increased by inclosing; inclosures from 5 to 25 acres. No common fields; little waste land. Labourers 9s. per week, ploughmen 20l. per annum, with a free house, cow, and fuel. Very little land pared and burned, roads good; farm houses might be improved; seldom any leases granted, but the want of them thought a great loss, as the farmers have thereby no encouragement to improve their lands; strict covenants betwixt landlord and tenant, which are thought detrimental to both. One of the greatest obstacles to improvements here, is confining the tenants to keep their lands in old pasture grass.

From Ripley to Paitley-bridge, the face of the country alters exceedingly. A great deal of wood land; road very unequal, and great part of it shaded with trees on each side. There is a fine valley or strath of land, called Nidderdale, or Netherdale, as we approached Paitley; in the midst of which runs the river Nid, and the whole dale appeared exceeding populous. Land in the dale all inclosed, mostly with stone dykes. Observed a number of fine cows pasturing in the fields, something of a cross betwixt the Holderness and Craven breeds: indeed we saw scarce any other stock but milk cows, great quantities of butter being made in the dale. Farms very small, and almost wholly in grass. Some turnips, and those taken great care of, for we noticed in several fields the tops cut off, and the turnip carrying home to be built in the barn. Little hay; and as for corn, we have not seen one stalk since our departure from Ripley.

Paitley is a fine thriving place: It being market day when we were there, the town was much crowded, and the shambles presented a sight which declared that the inhabitants were in no danger of starving for want of butcher meat. A great deal of linen is manufactured in this place and neighbourhood. The yarn is generally bleached before it is woven, which, we were told, makes the cloth much stronger than when it is wove before bleaching. Much butter is also salted here, and sent to York for the London market. One person alone exports from 700 to 800 firkins annually of 56lb. per firkin—the price for which it is contracted at, is 38s. per firkin. A cow in the dale, produces about 3 firkins during the season; but upon the higher grounds only 2 firkins. We learned that wool is greatly reduced in price this season, fine wool 15 l. per cent. below last year, and inferior qualities, at least 25 l. per cent.

A number of hogs are fed upon oatmeal, and sold to the Lancashire manufacturers at 7s. per stone of 14 pound. The hams are generally sent to the London market, as nothing will do with the Lancashire people but the fattest part of the beast.

At this place we spent the evening with — Moss, Esq. and received from him the following important accounts of the husbandry of Nidderdale.

The climate bad; very wet, and the harvest late. Some large estates, but the greatest part in the possession of small freeholders. Land occupied by small farmers, who are also manufacturers, miners, or people engaged in trade—generally kept in grass, and pastured with milk cows. No land watered; but thinks it may be useful in many cases. Oats the principal crop; best management, a fallow and three crops, and turnips taken to the fallow. Plough of the Rotherham kind. Land all inclosed, except the moors. Inclosing a great advantage. Approves of small inclosures on that wet, cold climate; and thinks inclosing has greatly increased population. Planting, in certain places, would be a great improvement—the moors incapable of improvement otherwise. Wages very high, owing to the mines and manufactories—average 2s. per day. Thinks paring and burning advantageous, but it is not much practised. A great demand for wood to the mines, and the quantity not adequate. Beef and mutton 3½d. per pound, wheat 6s. 6d. per bushel, barley 4s. 10d. oats 3s. beans 6s. 6d. Corn generally brought from Knaresborough and Rippon, as little is raised here in proportion to the demand. Land let both upon lease and at will. Length of leases, when granted, 21 years. The linen manufacture doubled within these 25 years. Lead mines carried on to a great extent. Thinks manufactures have served agriculture very much. Sheep fed in the dale, are of the Mug breed; those in the moors, of the Scotch kind. Is of opinion it would be of advantage if all the lands were under lease.

From Pateley-bridge to Grassington, we went through a large common, which appeared very improveable. Observed large flocks of sheep, mostly of the Scotch breed, of bad quality and condition. Examined the lead mines in the neighbourhood, which are numerous and valuable. Before we arrived at Grassington, the land improves in quality, and is all inclosed. A large woollen mill here, which formerly did much business; but since the stagnation of trade, occasioned by the war, has done little. Few or no turnips are cultivated about this place, and the most part of the people employed in the mines.

Substance of information received at Grassington.

Land chiefly possessed by small proprietors, and mostly occupied by them. Some extensive commons, consisting of many thousand acres—one of them lately divided, and the consequences beneficial. Oats the principal grain that is sown, but almost the whole of the neighbourhood is in grass; and employed in feeding cattle and sheep for the Skipton market. Lime produces great advantages upon the moors. Small tithes only drawn, and a modus taken for the great ones. Very few leases granted; but the gentleman from whom we had this information, was of opinion that the want of them was a great bar to improvements.

Leaving Grassington, we crossed the hills, and arrived at Settle. The far greater part of the way, for we cannot call it a road, lay through uncultivated moors. Consi-

derable parts of these moors appeared very improveable. We went through a large extent of stone inclosures, which we understood to have been common, and lately divided; but did not see the vestige of a house for more than 10 miles; so could make no inquiry whether the inclosing had produced beneficial consequences or not.

At Settle the low grounds are all inclosed, and the fences in the most complete state. The greatest part of the land is in grass, which for quality and verdure, can hardly be exceeded. Land in the neighbourhood of Settle, sets at 50s. and £3 per acre. It appears well worthy of it, for we received a well attested account of a 10 acre close, that fed in 1792, 20 head of cattle, and 40 sheep. Indeed the richness of the soil is hardly credible to those who have not seen it; and the possessors seem unanimously to think that it is of greater value when kept in grass, than to break it up and cultivate with the plough.

Settle fair being upon the day we were there, had an opportunity to see a great show of cattle of the county breed. They are universally long horned, and seem in shape, skin, and other circumstances, to be nearly the same as the Irish breed. We learned that there has not been the same attention shown of late, to keep the breed pure, by selecting proper bulls, as formerly. We are, however, of opinion, that the breed of long horned cattle, which prevails over the western part of the island, is admirably adapted, from the thickness of their skin, and hardness of constitution, to undergo the vicissitudes of this climate: and that the short horned breed, upon the eastern coasts, would never answer in this part of the country.

We received the following answers to the queries here, from David Swale, Esq.

The cultivated lands in the lower part of this district, consist of excellent feeding pastures; the higher grounds are rushy and spouty, occasioned by neglect of draining; a mode of improvement which has answered in a surprising degree, when applied judiciously. The soil of the low grounds generally rich mould, of the loamy and hazle kinds; the higher lands mostly turbary or clay. In this district there is a number of freeholders, from and under £10 a year, to £4 or 500. The greatest proprietors are, the Duke of Devonshire, Lord Thanet, Lord Grantham, Thomas Lester, Esq. Edward Parker, Esq. and several others. The lands of good quality, are generally employed in feeding. The tillage land is of an inferior sort, and lies in higher situations. Black oats are principally sown. Turnips are but little cultivated. The cattle that are bred, are of the long horned kind; the grazing stocks principally consist of Scotch cattle and sheep. Most of the high land is injured by water, and the want of fencing. There are considerable commons, consisting of many thousand acres, capable of great improvement, by inclosing and draining. This mode of improvement is checked by the necessity (as the law now stands) of having them divided by act of Parliament, as such commons have many proprietors. The rotation of management, upon the higher grounds, is mostly laying them down, after three years ploughing, for three years more, without any other cultivation than pasturing it with a breeding stock. In low situations, turnips are cultivated, and clover would answer, but is not adopted here; which is probably owing to the high price the land bears. In higher situations, these crops are very uncertain, and depend upon the weather. Fallowing is very little practised. Oxen were formerly used, but horses are now generally employed. The ploughs, carts, &c., are of the kind commonly used in the country. The land is generally inclosed, except the out-moors or

commons. Considerable advantage has arisen from inclosing, and the value has increased. Where cattle or sheep are pastured, the stock grows better, and although the quantity of wool is not so great, yet its quality is finer. The extent of waste lands is great, and the improvement by fencing and draining might be considerable. Some might, in that case, be converted into pasture land, others into arable, and others into planting, with a promising prospect of success. Paring and burning upon the high lands is much exploded, as wasting the soil where it can be ill spared. This district, in most parts, wants wood. Of late there has been a good deal planted, which promises well; but this article is not so much attended to, as might be wished. It would be of great utility to have the tithes properly regulated. Obstacles to improvement, are short leases, and the great scarcity of coal, which might be remedied by lords of the manors making trials to discover them, and by holding out rewards, and granting favourable leases to such persons as are willing to adventure in those undertakings. Poors rates very high here, not less than 6s. 8d. per pound rent.

At Settle we had also the good fortune to fall in with Mr. Barbeck, banker there, who took the trouble to introduce us to several intelligent farmers; the substance of whose information we now proceed to give.

Soil in the neighbourhood of Settle, of a hazle mould, upon a dry bottom: climate wet; land chiefly in the natural possession of small proprietors. Farms small, from £50 to £200 a year. Several commons, but the stock upon them stinted. All the low lands are in grass, and pastured with large cattle of their own breed, and the higher grounds by Scotch cattle and sheep: the sheep that are bred here, are called the *Mallam breed*. Wool disposed of at Huddersfield and Wakefield, and sold this season at 10s. 6d. per stone, of 16lb. 3½ fleeces to the stone. The wool of the Scotch sheep from Teviotdale, sold at 8s. per stone, and 3 fleeces made a stone. The salve used for smearing them, is one gallon of tar, and 17lb. of butter, which serves from 25 to 30 sheep. A great quantity of the high grounds capable of improvement; oats almost the only grain cultivated; no summer fallow, no turnips, no red clover, and but very little barley; lime very sparingly applied; plough of the Dutch kind, and drawn by four horses in a line. Think planting would thrive well upon the moors, and is much wanted. Labourers high, 2s. per day all the summer months, with victuals, in hay-time and harvest; draining advantageous and much practised, done with walls and covered; paring and burning not thought good farming. Farms both set upon leases and at will. Leases from 7 to 11 years; no manufactures but spinning cotton, which has not as yet proved detrimental to agriculture. No agricultural societies; but think the people have a turn for improvements.

Left Settle, and proceeded to Ingleton. The land all inclosed, and near wholly in grass, which was of the richest quality. No turnips to be seen since we left Pately-bridge, and hardly a blade of corn. In short, for these some days, from the plenty of grass, and scarcity of corn fields, we were ready to conjecture that the inhabitants of this part of Yorkshire lived upon butcher meat altogether.

Information received at Ingleton.

A large common in the neighbourhood, which is stocked with sheep by the farmers around, and which would be of great advantage to have divided. Land mostly

possessed by small proprietors, and almost totally kept in grass. A good deal of wool spun here for the Bradford market.

Leaving Ingleton, we proceeded for Dent-dale, the most western extremity of the county. Upon the road we called upon Bryan Waller, Esq. at Maisongill; from whom we had the following accounts of the husbandry in his neighbourhood.

Soil a strong loam, and, from the wetness of the climate, unfit for ploughing—generally possessed by small proprietors, and partly set upon leases of 3, 7, and 9 years. Land set here by the customary acre, 3 acres of this measure being equal to 5 statute acres. Small tithes paid in kind, and a modus taken in lieu of hay. The farmer allowed but to plough a small part of the land, often but eight acres, where he possesses a hundred. Ploughing more practised formerly, but breeding and feeding cattle is now thought more profitable. No turnips. Cattle fed in the house during the winter months, upon hay, which renders beef very high in the spring. A number of Scotch cattle wintered upon the pastures, which are disposed of by Midsummer—the commons are stocked with Scotch sheep, the large breed being thought above the pasture. Cattle that are bred here are all of the long horned kind. No land watered here—thinks it would be hurtful in this cold country. Very little fallow, and no attention paid to the plough. Lime applied to the pasture grass: and mixed with earth and cow-dung—the remainder of the dung laid upon the field that hath been cut for hay. Plough wrought with three horses, often four, and all yoked in a line. Land all inclosed, except the commons, partly with hedges, and partly with stone dykes.—Inclosing has increased rents greatly. A great deal of waste land in the moors, which he cannot say is improvable, as planting is not found to answer. Wages high—labourers 1s. 8d. per day and victuals, during hay-time and harvest. Some of the lands are drained—shoulder drains have been found to answer upon mossy soil, where it is improper to put stones; but in general all drains are built with walls, and covered with flags. Thinks paring and burning not good farming. Wood very scarce in this part of the country. Farm houses rather stand too much in the villages, and therefore inconvenient. Some cotton mills, which employ a good number of hands—no other manufactures. Does not think the people trouble their heads much about improvements, and thinks the present stock of sheep well adapted for the soil and climate.

Continued our journey to Dent.—A great deal of good land, but the general quality of the soil, thin and moist bottom. Learned that there was a considerable quantity of butter salted in this tract, and disposed of at Skipton. Upon our road this day, saw two rams in an inclosure, chained together; which is an excellent scheme to make them settle. Arrived at Dent, after a tedious and disagreeable journey, having in the course of it passed through a small part of Lancashire, and travelled about eight miles in the county of Westmoreland.

We entered Dent dale from the west, and proceeded down the dale to the town of Dent, which is nearly in the centre. This dale is entirely surrounded with high mountains, and has only one opening from the west, where a carriage can enter with safety. It is about 12 miles in length, and from one and a half to two miles in breadth. The whole dale is inclosed; and, viewed from the higher grounds, presents the picture of a terrestrial paradise.

At Dent we received the following information relative to the state of the dale.

Estates are small, and chiefly in the natural possession of the proprietors. Inclosures small, and mostly in grass. No farms above £50 a year, and none but yearly

leases granted. Sheep mostly from Scotland. Few cattle are fed, but a great number of milk cows are kept, and large quantities of butter and cheese produced. The hills in the neighbourhood of the dale, are all common, and dividing them among the different proprietors, it is supposed, would be attended with beneficial consequences. A considerable quantity of stockings wrought by women upon wires, which are disposed of at Kendal. Very few turnips cultivated, hay being the chief dependance in winter. Small tithes only drawn in kind, and a modus taken in lieu of the great ones.

Returned from Dent to Ingleton, where we met, agreeable to appointment, with Mr. Ellershaw, of Chappel le Dale, about four miles from this place. Mr. Ellershaw gave us the first account of watering land, which is done by him, and several of his neighbours, to great advantage: he floats it early in the spring, which not only rots the moss, but enriches the land considerably. The commons here are all stinted, every man who enjoys a privilege upon them being restricted to the quantity of stock he is to put on them. There is not much land limed in the neighbourhood, and what is done, is applied very sparingly. Few or no leases granted; and where they are, but of short duration. Tithes drawn in kind; but Mr. Ellershaw thinks it would be for the peace and interest of the community to have them valued. No turnips raised. Sheep generally of the Scotch kind. Wool sold at 6s. 3d. per stone this season. Some stockings knit for the Kendal market.

Visited Settle again on our road to Skipton. From Mr. York's steward, at Long Preston, we learned that they had pared and burned a great deal of the higher grounds, which had turned out well; and had tried wheat, but found it did not answer. Oats is now their principal crop. After them the land is fallowed and limed, and laid down with grass seeds. Their management, in other respects, being similar to the rest of the country, it is unnecessary to repeat it. At Gargrave, half way between Settle and Skipton, we saw most excellent fields of grass. It is impossible to say what sorts of seeds had been sown, or whether any had been sown at all: they seemed a mixture of all sorts of hay-seeds, but richer grass cannot grow.

Arrived at Skipton. This place, which stands in the middle of the district of Craven, is for distinction, usually called Skipton in Craven.

At Skipton there is a large house employed in sorting and combing wool. About 3000 packs are bought each season from Lincolnshire, Nottingham, Leicester, and Rutland shires. After it is sorted and combed, it is spun at the Company's mills, at Linton and Addingham, in the neighbourhood, and made into stuffs, viz. shalloons, calimancoes, and all sorts of double goods. The noyles from the combing are used for the Duesbury and Rochdale trade.—We received the following information from Mr. Hales, steward to the Earl of Thanet.

The proprietors in the vale are, the Duke of Devonshire, Lord Thanet, and a number of small freeholders. Farms of different sizes, but the majority rather small. Soil deep and rich. The whole vale almost in grass, being from the wetness of the climate accounted unfit for corn. What land is ploughed, is upon the higher grounds, and oats the principal crop. Few or no turnips cultivated. All the vale inclosed. Inclosures small. Cannot say whether inclosing has affected population or not, as it is such a long time since the vale was inclosed. No common fields here, but thinks, wherever they are, they ought to be divided. Wages high—labourers from 18d. to 2s. per day, women 1s. Not much paring and burning—does not approve of it. Very little wood,

but thinks a great part of the moors might be planted to advantage. Provisions high; beef being at this time 4*d.* and often 5*d.* and 5½*d.* Corn brought here from Richmond in the North Riding. Roads good. Farm houses in general well situated. Lord Thanet's estate upon lease of 14 years. Duke of Devonshire grants none. Lord Thanet formerly granted leases for 21 years, and the estate was much improved. Other estates, where leases have not been granted, are not half so much improved. The covenants laid down by Lord Thanet, are only to fallow, lime, and manage in a husband-like manner. No manufactures, except some cotton mills, which have done no harm to the agriculture of the country. Grass lands in the vale, set from 40*s.* to 50*s.* per acre, and some at £3. Plough yoked with three horses—no oxen used. Thinks it would be for the general good that leases were always granted; and also that the payment of tithes was regulated upon proper principles.

The management from Paitley-bridge to the western extremity of the county, is almost uniformly the same, and grass the sole object. The people unanimously think that corn will not pay so much rent as grass, therefore raise very little, except upon the higher grounds; and at the same time lay all their manure upon the rich, fertile fields in the vale. By this means they are reduced to the absolute necessity of purchasing corn, at an advanced price, from other places, where more attention is paid to the cultivating it. From what we could learn, a great deal more corn was formerly raised than now; which is evident from tithes having decreased four-fifths in value within these thirty or forty years.

We learned from the Rev. Mr. Wethnell, that the husbandry at Keightly is much in the same style as here, only rather more corn raised, and that the moors and high-grounds are used for breeding cattle.

From Skipton proceeded down Wharfedale to Otley. For the first four miles the soil is barren moor, and perfectly unimproveable, unless planting will answer, which, from the highness of the situation, is very doubtful, unless the larch will prosper. At Addingham, the soil turns good, and the whole way to Otley remarkably rich. At Sir James Ibbelton's, at Denton, there are fine large haughs of grass, and the inclosures larger than we have seen in Yorkshire. Saw some corn fields upon the road, but not in good order; and a few fields of fallow, not half wrought. Observed some turnips, the first we have met with for a long time. Examined a plough; the first we have seen these four days, and it appeared to be of the Dutch or Rotherham kind, but of wretched construction. The field it was lying in was full of quickens—provincially whickens. The land almost wholly inclosed.

At Otley we received a variety of information.—We give the substance of it:—

Soil very good. Climate dry. Some large proprietors, but a greater number of small ones. Farms chiefly small, few above £50 rent. Land mostly employed in pasture, and sown with white clover and hay-seeds. Little land watered; but understood some people have done it to good effect. When land is broke up from grass, three crops are taken, and then a fallow. Few turnips are cultivated. Some lime used. Harvest early. Land all inclosed, and thought much more valuable than when open field. Wood much scarcer than formerly, but a great deal of the waste land might be planted to advantage. Tithes compounded at 5*s.* and 6*s.* per acre. Rent of land here 40*s.* per acre, and all public burthens. Want of leases greatly complained of. Some

cotton mills, which have done good, by employing young people. A common lately divided in the neighbourhood, which has turned out well.

Arrived at Leeds.

Leeds is situated on the river Aire. It is a very ancient, and populous town, and was of considerable repute during the Saxon government. The woollen manufactory has flourished here for several ages, which has both enriched the inhabitants, and increased the value of all the land in the neighbourhood.

The following is the most accurate accounts we could procure of the state of husbandry near Leeds.

The soil variable—a great part of it good, generally loam upon a clay bottom. Climate dry. Land possessed by small proprietors, and mostly occupied by manufacturers: a few of what are here called large farmers, having from 100 to 150 acres of land. Land employed partly in pasture, partly in meadow, and a proportion in tillage, but ought to be all in grass upon account of the great demand from Leeds for milk. Some clover, and rye-grass sown. The stock kept upon the pastures are cows and horses belonging to the manufacturers. Part of the land watered and turns out well. Grains cultivated are wheat, barley, oats, and beans; also some rape, and turnips, which are generally sown broadcast. A few beans are drilled. Fallowing much practised. Large quantities of potatoes raised, and a great demand for them. Much lime is used, and both grass, and fallow dunged. An excellent manure is got from the sizing boilers' waste, which is the bones and remains of sheep feet, cows feet, and sloughs of horns. Horses only used.—Seed time, and harvest early. Land mostly inclosed, and rents greatly raised thereby. Inclosures from 5 to 8 acres, and the smallest ones most valuable, being possessed by clothiers, who have no use for large ones. Inclosing in a manufacturing county must increase population. Very little waste land but what might be improved by dividing and inclosing. Wages.—Masons 15s. to 18s. per week. Carpenters the same. Mill-wrights, 18s. to 21s. and day labourers 9s. to 12s. Journeymen clothiers each from 9s. to 15s. per week. Ploughmen £12. per annum, with victuals and beer. Very little paring and burning, unless where commons are newly divided—the expence from 19s. to 27s. per acre. Not much wood, as land can be used to far greater advantage otherwise. Provisions high—Beef 4^d. and 5^d. and much higher in spring. Roads in general but tolerable, owing to their being let to undertakers, who neglect them. Houses for manufactures well constructed; and a great many more wanted. Few leases—when granted, their duration from 3 to 15 years. The nature of the covenants in them is, that the tenant pays all taxes, keeps all in repair, is bound not to break up any grass land, under penalties, that run from 5s. to £20. per acre, and to have at least two-thirds of the farm in grass; upon the tillage part he must not take above 3 crops without fallowing, and all the fallows must be limed.

Broad cloth and other different manufactures are carried on here, which have greatly increased rents. There are no agricultural societies, but the people have a great turn for improvements—the expence is not regarded. Several inclosure bills have passed for moors in the neighbourhood, which have produced the most beneficial consequences. Tithes both small and great, drawn in kind, but the general opinion

is, that a compensation in money, in place of them, would operate as a great encouragement to improvements. It was also the opinion of our informers, that a general inclosure bill, upon proper principles, would be of great public utility; as by it, they said, much expence would be saved to individuals, houses would be provided for manufacturers, and the people prevented from emigrating.

Left Leeds, and proceeded to Bradford. Rather more corn land than we have as yet seen during the survey, but all in bad order. A good deal of oak wood about Kirkstall Abbey, about 3 miles from Leeds. Observed a plough at work, and drawn by 4 stout horses all in a line. The plough of a very indifferent construction, and taking a very ebb furrow, not the depth of what 2 horses will do when yoked properly abreast—the land very much damaged by the large sweep the horses took when turning. Saw another plough upon a soft moor going with 3 horses—a very ebb furrow but the straightest we have as yet seen in Yorkshire. Indeed in those parts of the country we have hitherto surveyed, ploughs are so scarce, that they may almost, like horses at Venice, be shewn as a curiosity.

Information got at Bradford.

The nature of the soil various, some parts being rich loam, and others of a cold watery quality. Climate healthful. Land is possessed by small proprietors, and occupied by small farmers and manufacturers. It is almost all in grass, and the seeds sown are mostly those called, natural hay-seeds. Cows are the principal stock that is kept. Where the land is in tillage, wheat and beans are sown in small quantities, but oats are the principal crop. Some good farmers adopt the modern rotation of turn ps^e, barley, clover, and wheat. Fallowing is practised, but often in a very slovenly manner, and the rotation in that case is, wheat, oats and oats; or wheat, beans, and oats. The country is all inclosed; inclosures small, few exceeding 6 acres, and by them the country has both been enriched and the land improved. Labourers wages, 9s per week. Ploughmen £12 per annum, with victuals, lodging, and washing. Paring and burning only practised where heath ground is broke up. Few leases are granted, those that are, are generally for 11 years, and the covenants are, to lime all the fallows; not to take more crops than 3; to keep the premises in repair; not to sell hay, straw, or manure, provincially, tillage; and not to assign. No practices can be pointed out here, that would be of advantage in other districts, the inhabitants having both their minds and capitals fixed upon trade.

Arrived at Halifax—the whole country from Bradford to this place, being almost a continued village; roads bad ever since we left Leeds, and materials very scarce. Observed most of the roads are provided with a foot-path, paved with free stones, which is a most useful measure; but, strange to tell, every person upon horseback uses the foot-paths. The first person we saw going upon these large polished stones at full speed, we thought wrong in the head, and every moment expected his horse would come down, and break the rider's neck; but a short time convinced us that it was the universal practice.

Halifax is a large and populous town, and is situated upon the river Calder. It stands upon a gentle descent from east to west, which makes it pleasant and conve-

nient. The houses are, in general, built of brick, though free-stone appears to abound in the neighbourhood; and as little attention appears to have been paid to the laying out the town at first, the streets and buildings are rather irregular and confused. The woollen manufacture has here flourished for near three centuries; and though the soil in the neighbourhood has been originally barren, and probably, for that reason, was chosen as a proper place for carrying on manufactures, yet the industry of the people has been so great, as to improve almost every spot near the place, thereby making good the old proverb, that a barren soil is an excellent whetstone to promote industry.

The parish of Halifax is in the wapentake of Morley, and consists of 26 townships or hamlets. The parish is of great extent, and supposed equal in size to the whole county of Rutland. It is about 17 miles in length, and 11 in breadth. From this extent it clearly appears that the ground must have been a barren waste, and the population of small amount, when the parish was formed.

Several parts of the parish afford coals, which are absolutely necessary for carrying on that extensive trade, for which this neighbourhood is famous. The air is good, and chiefly blows from the west and south-west, and often attended with heavy falls of rain; but, as there is but little level land in the parish, the rain which falls soon runs off, and of consequence the country is clean and dry, which contributes both to the ease and health of the inhabitants.

We observed some fences of a very uncommon kind in this neighbourhood. Large flag stones of 3 feet height, set upon their end, are fastened in the ground, which make a fence both complete and agreeable. We cannot speak to the expence, but as stones of that kind are here in plenty; we suppose a fence of this kind will be comparatively cheap.

The cloth hall at Halifax, is a large building, the area being 300 feet in length, by 240 in breadth. Part of it is 3 stories high, the remainder 2 stories, and it contains, no less than 315 different rooms, where the manufactures of the town and neighbourhood are exposed to sale. It is open each Saturday at 10 o'clock, and is shut by 12 o'clock. A bell is rung when the market commences, and ceases; and those who purchase before or after market are liable to a penalty. The original cost of the building was £12,000; and we were informed that the value of goods in the hall is never considered at less than £50,000 at a time.

We waited upon William Walker, Esq. at Crownest near Halifax, and examined his improvements, which are executed with singular taste and ingenuity. Mr. Walker waters his ground with great success, and it is all laid off with great attention for this purpose. All his inclosures are in perfect order, and his farm offices in the neatest condition.

Mr. Walker was so kind as to favour us with the following accounts of the husbandry in the parish of Halifax.

The soil varies much, but in general is naturally poor. Proprietors both large and small. Farms mostly small, and occupied by manufacturers for the convenience of keeping a cow or two, for the use of their families, and conveying their goods to the mill and to the markets. The land is principally in meadow pasture grass, and is sown with natural hay-seeds, rib-grass, and rye-grass; and where it is not used for the manufacturer, as mentioned above, it is pastured with a mixed stock of horned cattle and sheep. Great advantages are found to result from overflowing the meadows at proper sea-

sons, and particularly in time of floods. Land is generally fallowed after the third crop. Sometimes turnips are taken upon the fallow, then barley, clover, wheat, or oats. A small quantity of wheat is sown, and very few beans. The lands, except the heath moors, are mostly inclosed, but there are doubts, whether any advantages at all have resulted from inclosing the waste lands in this parish. The size of inclosures are in general from 2 to 4 acres. Inclosing in this parish has certainly had no tendency to decrease population. The extent of waste ground, if we include the heath, can scarcely be guessed at. It is, however, very considerable, and there is some worth the expence of inclosing for cultivation: at any rate, it is worthy of consideration, whether it is not a desirable object, that each freeholder's property be ascertained, that such as are inclined to improvement, may do so by planting or otherwise. Wages high, husbandmen get from 18*d.* to 20*d.* per day; in time of harvest 2*s.* Great attention is paid to draining, which is done in a complete manner with stones. A very inconsiderable quantity of wood-land in this parish. Price of provisions, butter 12*d.*, beef 3½*d.* and 4½*d.*, mutton 4½*d.* and 5*d.* veal 4*d.* and 4½*d.* The roads are very bad. The houses and offices are built for the accommodation of the manufacturer, not of the farmer. Leases are granted for various terms, from 7 to 21 years; but very frequently no leases at all are granted. The principal manufacture here is woollen and worsted goods, and some cottons. Manufactures are the grand object of persons of all descriptions, and the land is divided into small farms, in aid of the manufacturer. There are very few who attend, in any degree, to the cultivation and improvement of the ground, which is regarded only as a secondary object.

Set off for Wakefield. The soil appeared thin for a considerable part of the way, and rather of an inferior quality. At Dewsbury the ground turned better, and a number of fine fields appeared upon the banks of the Calder below this place. The road from Halifax to Wakefield in most shocking condition, and the heaviest stage we have travelled. Observed the materials are of bad quality, and that to render them harder, a great part of them are burnt before they are laid on the road; also that clay was burnt into a kind of brick, and used likewise for repairing the roads. Want of proper materials is a local disadvantage, for which the road surveyors can never be blamed. They seemed however to us, to be carrying on the repairs upon bad principles: instead of filling up the old ruts, which were very deep, and levelling the surface, a new covering was laid indiscriminately on, which will never bed firmly, or consolidate in any situation. Besides, the repairs were carrying on at an improper season, for the roads appeared to receive considerable damage from driving the materials.

Saw 3 large strong horses this afternoon, drawing a light break harrow, which might have been easily worked with two. The horses go uniformly in a line, and seem much stronger than any we saw in the northern parts of the Riding.

Wakefield is a large well-built market town, and possesses a considerable share of the cloathing trade. It is very populous, and has two market days weekly, at which great quantities of cloth, wool, corn, and provisions of all kinds are sold. It stands upon the river Calder, which by an act of Parliament 1698 was made navigable as far as this place. A canal is, at this present time, making from hence to Barnsley.

From Wakefield to Pontefract, the soil is much drier, and corn fields more numerous. Passed a large common field, which appeared in very bad order. Arrived at Pontefract, and met with a number of intelligent farmers, from whom we received

much information. They all concurred in one sentiment with regard to tithes, viz. that it would be a material encouragement to improvements if they were commuted; also that every common field in the kingdom ought to be divided. Provisions very high. Barley sold in the market this day at 40s. per quarter.

Information received at Pontefract, about the cultivation of Liquorice, from Mr. Hally, seedsman and nurseryman there.

The soil most proper for liquorice, is that of a deep, light, sandy loam. It is trenched three feet, well dunged, and planted with stocks and runners in the months of February and March, on beds of one yard wide, thrown up in ridges, with alleys betwixt them, and the beds hoed and hand-weeded. The first year a crop of onions, is taken in the alleys, and the tops of the liquorice cut over every year. The ground is trenched when the liquorice is taken up, and all the fibres cut off. A considerable quantity more than 100 acres, is cultivated in this neighbourhood. It is a very precarious plant, often rotten by wetness, and also hurt by sharp frosts in the spring, and dry weather afterwards. Rent of the land, upon which it is cultivated, about 3*l.* per acre.

Mr. Halley also cultivates rhubarb, and has done it to advantage. The quality is esteemed good, and he lately received a medal from the society of arts for the culture of it. Land about Pontefract of very fine quality, sets from 40 to 50s. per acre, and is kept nearly in equal proportions of pasture and tillage.

Waited upon Mr. Green at Cridling Park near Ferrybridge. Mr. Green rents this farm from one of the colleges at Cambridge. Is a complete farmer, and keeps his land in good order, but is absurdly restricted by his lease from breaking up old grass. Here we received the following information.

Soil of various qualities, lime-stone, clay, and sand, being the prevailing ones. Upon the lime-stone the following rotation is adopted. 1st. fallow, 2d. barley, 3d. clover, 4th. wheat. Upon the clay, 1st. fallow, 2d. wheat, 3d. beans, 4th. wheat or oats. Upon the sand, turnips, barley, clover, and wheat. Both estates and farms generally large, and the farms kept in equal proportions of pasture and tillage. Does not water his land, but wishes it was in his power, as he thinks the practice advantageous. A great deal of lime used; about 48 bushels applied to the acre, and repeated every fallow. The fallow also manured with stable and pigeon dung. Ploughs of the Dutch kind, and wrought sometimes with two horses abreast, at other times with three abreast, and often with four, yoked in pairs. Seed time and harvest early. Land all inclosed, and the size from 5 to 12 acres. Advantages of inclosing great, and population increased by it. Some common fields, which would be greatly improved by dividing and inclosing. Very little waste land; servants wages 1*s.* per week, and find themselves in victuals; and from 5*s.* to 6*s.* when kept in the house. Paring and burning only practised upon the commons that are taken in, and upon old coarse land; expence from 16*s.* to 24*s.* Wood sufficient to serve country purposes. Provisions high, beef and mutton about one penny per pound higher in the spring months than at this time of the year. Farm houses and offices might be greatly improved; some leases granted for 21 years; but the practice of giving them from year to year, is fast coming in, which is both a loss to the farmer, and a bar to im-

provements. Thinks restrictions in the lease a hardship upon a good farmer. The people have a turn for improvements. Thinks that a general inclosure bill would be of material advantage to the public.

Proceeded southward for Mr. Gill's at Natton. The lands upon the road of good quality, and well farmed. Fallows clean. Saw some very large fields of wheat making a vigorous appearance.

Information from Mr. Gill.

Soil generally of good quality, part of it gravel, the rest clay, upon a wet bottom. About two-thirds of the ground kept in tillage, and one-third in pasture. Red and white clover sown with rye-grass. Breeds a few horses, and feeds both cattle and sheep. Rotation—fallow, upon which turnips are taken, barley, clover, and wheat, sometimes oats. Uses a good deal of lime, but applies only 30 bushels to the acre. Brings great quantities of bones from Sheffield, which is at 20 miles distance, and lays on 50 bushels per acre; costs from 15*d.* to 18*d.* per bushel, besides carriage. Plough of the Dutch kind, and wrought mostly with two horses abreast, but sometimes with four in strong land. Carts of the ordinary construction of the country, and drawn by three horses. Land all inclosed, which Mr. Gill thinks of great advantage. Size of inclosures from 2 to 14 acres. Thinks small inclosures very hurtful. There are several common fields in the neighbourhood, which should be divided and inclosed; very little waste land; wages of a ploughman, £ 11 per annum, and victuals. A good deal of land is drained, big stones being set in the bottom of the drain, leaning towards one another, and filled up with small stones. Paring and burning practised here; but the landlord's consent must be got—expence 20*s.* per acre. Roads generally good and well managed, but materials bad. Funds are 6 days labour of a team for £ 50 rent, and 9*d.* per pound assessment upon the rent. No leases granted, which he thinks retards improvement. Tithes paid for in money, at the rate of 6*s.* or 7*s.* per acre. Sheep in this neighbourhood are either of the Scotch kind, or purchased at Peniston, from the moors in the western parts of the county: the wool of the former sells for about 8*d.* per lb. the other 9*d.* People have a turn for improvements, and know no obstacles but the want of leases, and payment of tithes.

Having a letter for Mr. Spencer Stanhope, of Cannon hall, we went there, but unluckily he was from home, being with the West Riding Militia, at Tinmouth barracks. Called for the steward;—who gave it as his opinion that it would be for the public interest, that all land was set under lease, with proper restrictions.*

Arrived at Bretton hall, the seat of Mr. Beaumont, and experienced the greatest attention from that gentleman. He was at the trouble personally to shew us a part of

* We are not fond of introducing into this work, subjects that are not connected with Agriculture, or the state of the country; but the inscription which we saw under the picture of a dog, in the hall here, was so remarkable, that we cannot help inserting it.—“Rover, a hound, the property of John Spencer, Esq. in the year 1753, being very mangy, and suspected of madness, was condemned to the gallows, where, on 16th August, he was hanged for the space of a quarter of an hour, by Thomas Beck, the huntsman: being let down, and some small symptoms of life appearing in him, he was tucked up for another quarter of an hour, and then thrown into a coal pit, 30 yards deep; from which he was extracted on the 13th November, by the said Thomas Beck, alive and in good health.—He was twelve weeks and five days in the coal pit.”

his large estate, which is farmed in as complete a style as any in Yorkshire. Saw very fine broadcast turnips at Mr. Brook's, one of Mr. Beaumont's tenants: they were remarkably clean, a thing rather uncommon in this country. Were introduced to several of the tenants, whom we found sensible, industrious men. They were busy sowing their clover leas with wheat. Their young grasses were making a most vigorous, close, and equal appearance. Mr. Beaumont has a good deal of wood upon his estate, which is very thriving and profitable. Farm-houses and offices are excellently constructed, and well situated. Understood the late Sir Thomas Blacket, Mr. Beaumont's father-in-law, was very attentive to these matters; and although he granted no leases, was otherwise a kind and indulgent master.

Examined Mr. Beaumont's flock of sheep: those of the Shetland breed are not doing well; whether the climate is against that kind or not, we cannot say, but the fact is, they are not thriving in body, and their wool is fallen off.

The Ryeland or Hereford breed are doing but middling, and the Peniston or country breed, best of all. It will be a curious fact, if it turns out that the original breed of every country is best adapted to the nature of the soil and climate. Saw some good sheep at Mr. Hague's one of Mr. Beaumont's tenants. Mr. Hague, had three sorts, one from the Duke of Newcastle in Nottinghamshire, one of his own breed, and the other of the Peniston. We thought his own excellent. Mr. Hague has got a tup of the Bakewell sort, with whom he is to cross his own ewes, which we thought would produce a capital breed.

Saw two threshing machines of the small construction, each drawn with two horses, and making clean work. One of them was threshing wheat, the other oats, and the draught appeared quite easy to the horses.

Went and viewed a large cloth manufacture at Netherton, upon Mr. Beaumont's estate. The whole progress is here carried on, from buying the wool, to finishing the goods. Every thing appeared carried on in a regular manner, by Mr. Bryant the manufacturer. Wool chiefly from Norfolk and Sussex, with some Spanish. Mr. Bryant has 80 acres of land, adjoining his manufactory, which he has highly improved by bruised bones, and the refuse of the boiled size used in his manufactory.

From Mr. Beaumont's steward and tenants, we received instructing information relative to the husbandry practised upon his estate. It would take too much of this journal to give the whole of it, must therefore content ourselves with an abridgement.

The soil is variable, chiefly hazle kind of earth, mixed with clay and a loamy sand, both retentive of water. Some parts dry and sharp, well adapted for turnips, which are generally cultivated upon all the fallows, and eaten with sheep. Proprietors here, are Mr. Beaumont, Mr. Wentworth, Mr. Stanhope, &c. Size of farms from 150 to 200 acres. Land chiefly in tillage; one-third only kept in pasture; several rotations of crops are practised; 1st. fallow, wheat, oats, and barley. 2d. turnips, barley, clover, and wheat. Often hay-seeds and white clover is sown with the barley, upon which sheep are pastured for two or three years. No land watered, but thought advisable when opportunity allows. Manures used are dung, lime, rape dust, and lately a great deal of bones. Mr. Hague, says bones answer best on the turnip land, 100 bushels of bone, and four loads of dung, mixed with good earth, is laid upon a statute acre. Quantity of lime applied to the acre, generally about 90 bushels.

Rape dust one chaldre per acre, price £ 3. 12s. besides carriage. Rape often sown for sheep feed, but not cultivated for seed; at least what is done, is in very small quantities. Carriages with broad wheels are used for the fields, and narrow wheels for the roads. Ploughs used, are of the Dutch or Rotherham kind, yoked sometimes with two horses abreast, at other times three in a line. No oxen used; wheat sown from the beginning of October, to the end of November; sometimes to February, after turnips: but that season not approved of: spring corn in March and April. Harvest variable, generally commences about the 18th August, and over by Michaelmas. Land chiefly inclosed; inclosing of great advantage, and thought to be one-fourth more value than open field. Inclosures from two to twenty acres; average about ten acres; inclosing thought to increase population. A few common fields in the neighbourhood, and these thought to be under bad management; very little waste land: wages for ploughmen £ 12 per annum, with victuals, washing, and drink. In harvest, labourers 2s. per day, and 2s. 6d. with beer. Hours of work from six to six, with one hour allowed to dinner, and another for the two drinkings: in winter from light to dark. Draining a most necessary article of improvement, and great attention bestowed on it; two stones being set up leaning on each other, and the drain filled up with small stones. Paring and burning practised, but not thought good farming; expence when done 21s. per acre, with beer, which makes it equal to 24s. A good deal of oak and ash wood in the neighbourhood, generally cut once in 21 years, a regular portion being done annually, sometimes sells so high as £80. per acre. Provisions—beef from 3d. to 5d. mutton 4½d. butter 11d. and 1s. all avoirdupois weight. Roads in this township good, but bad in many others; supported by the statute work of six days labour of a team for every £50. rent, and 6d. a pound assessment; but this rate may be raised higher by the justices, if they see necessary. Farm houses and offices good, and well constructed for serving the purposes of husbandry. Some manufactures creeping in, which are raising wages. The people here have a great turn to improvements, and have no obstacle but want of leases; which from the kindness of their landlord, is little felt. There is no restriction upon their management that is hurtful, but one, which prevents them from breaking up their grass land that has lain six years, without the landlord's consent.

Mr. Slinger at Emly Woodhouse, upon Mr. Beaumont's estate, practises the drill husbandry both for wheat, pease, and beans; but does not think drilling at all times and in every situation, advisable. Mr. Slinger uses a machine for threshing his corn, which he thinks does the work much better than is done by the flail: and which machines are particularly necessary here, since wages became so extravagantly high. No want of hands in this neighbourhood to cut the crop. In the year 1792, the scarcity was great in the East-Riding, but felt here no farther than rising wages. An inclosing bill lately passed for dividing land near Wakefield; but as it is not yet put in execution, cannot say how it will operate,—are unanimously of opinion that all commons ought to be divided, as they know some that formerly carried only some beggarly sheep, now improved into good fields.

Arrived at Barnsley.

Barnsley, or Black Barnsley, is a town of considerable size, and situated in the wapentake of Staincross; it carries on a considerable trade in wire, and has a manufactory

for bleaching and weaving linen yarn, which is in a flourishing state. There is a weekly market held here, where corn and all sorts of provisions are sold. It being market day when we were there, had an opportunity to see the quality of the different grains. Wheat and barley good, but the oats very indifferent, which in general we found to be the case over all the West Riding.

At Barnsley we received information from several persons, relative to the agriculture of the neighbourhood.

Soil generally clay and gravel. Climate mild. The greatest part of the land in the hand of small proprietors. Size of farms 20 acres and upwards. Greatest part of the land in tillage. Pasture sown with white clover, trefoil, and hay-seeds. Some red clover which is ploughed down for wheat. All kinds of grain sown, 3 crops to a fallow. Rotation, as usually practised upon the dry land, is turnips, barley, clover, and wheat. A good deal of lime used, 4 chalders applied to the acre, with some bone manure. Plough of the Dutch kind; 3 horses commonly yoked in a line, and sometimes 4 upon the clay land. Land mostly inclosed, the inclosures from 4 to 10 acres. Some common fields, but thought one-third less in value than inclosed lands. Paring and burning practised—thought useful when old grass land is broke up. Country sufficiently wooded, both with oak and ash. The people have a turn for improvements, if they were not prevented by want of leases and injurious covenants betwixt them and their landlords.

The land to the southward of Barnsley of the finest quality, being either a clay or a loam fit for turnips, and a great proportion of it kept in tillage. Mr. Hemmingway at Wombwell, gave us an account of his practice, which is very correct. He keeps about one-fourth of his farm in pasture, which is sown down with white clover and hay-seeds; sometimes sows red clover by itself, pastures it in the spring, and then lets the crop stand for seed; sows white clover for the same purpose, and has often 6 bushels red per acre, and 4 bushels white. If good in quality, a bushel weighs 66 lb. Employs his pasture to support his farm stock, and in feeding ewes and lambs—ewes of the long woolled kind from Northumberland, and rams of the Bakewell breed. Does not water any land but approves of it when situation allows. Cultivates turnips in large quantities, some of them drilled. Fallows every fourth year, and manures with dung, rape dust, and bones. Plough of the Dutch kind, and wrought with two horses abreast. Carts long in the body, and of the same construction with the rest of the country. Land mostly inclosed—inclosures from 5 to 15 acres. Does not think inclosing can ever decrease population. Pares and burns old grass land, expence 21s. per acre. Pays great attention to draining—makes the drains 2 feet deep, 18 inches wide at top, and 12 at bottom, and fills them with stones. Roads very bad, and materials scarce. Few leases granted, which he thinks a bad plan.

From Barnsley to Peniston the country falls off, and is of a moorish soil near the latter place. A market for sheep is held, and large quantities of those that go by that name, are sold weekly. They are bred on the moors to the westward of Peniston, and on those of Cheshire and Derbyshire—prices at present low, and sale dull. Had a meeting with several farmers, who communicated to us the following information concerning the husbandry of the adjoining country.

The climate cold and backward to vegetation. Soil very variable, but mostly wet and spongy, and a great deal of moor carrying little but heath. Proprietors small,

Mr. Bosville of Gurthwaite, the representative of one of the oldest families in the county, being the only large one. Farms likewise small, except upon the moors. In the vicinity of the town about one half is ploughed, but in the moors there is little or no tillage at all. The stock is sheep and long horned cattle, of the Derbyshire breed, which are smaller than the Craven breed. Little grain is cultivated, except oats and a small quantity of wheat. Dung chiefly applied to the meadow land that has been cut for hay, and 2 chalders of lime per acre laid upon the fallows. Plough wrought with 4 horses yoked in a line. Few oxen used. Seed time and harvest late, sometimes November before the harvest is concluded. Some land about the place inclosed, but to the westward it is all common moors; which ought at least to be divided, and every man's property laid by itself. A great deal of the land needs draining, but the proper method of doing it, not well understood. Farmers generally debarred from paring and burning, but thought a great means of improvement upon some lands. Few proprietors grant leases, but it would be for the advantage of the farmer to have them.—The Rev. Mr. Horsefall, in answer to this question said, if he was a farmer, he would lay out his money more frankly under the security of a lease, than if he had none. Many restrictions are in the leases, or yearly bargains.—Some farmers thought to need them, but an active industrious man hurt by limitations.

Left Peniston for Sheffield. Most of the way the soil indifferent.—Saw some patches of turnips, but none of them good. Road to Sheffield high, and very unequal. Fine country to the northward, and abounding with oak-wood.

Sheffield is situated upon the river Don, and has long been a staple place for cutlery ware of all kinds. It is a populous town, containing not less than 40,000 inhabitants. The lord of the manor is the Duke of Norfolk, who likewise possesses a large estate in the neighbourhood.

Information from Mr. Peach at the Angel Inn, who occupies several farms.

Soil generally of a deep clay, and from the quantity of manure, very rich.—Climate moderate. Some great proprietors, such as the Duke of Norfolk; but a number of small freeholders. In the neighbourhood, most part of the farms are small, and the Duke of Norfolk is reducing their size, as fast as the leases expire, for the convenience of the inhabitants. About a third part of the land is kept in tillage. Grasses sown for pasture are, white clover, and hay-seeds, and red clover, and a little rye-grass for cutting. Rotation practised by Mr. Peach is, after breaking up his pasture land,—oats, winter tares, oats again, frequently wheat, pease, and then summer fallow; which is ploughed as often as possible. Limes most of the fallows from Derbyshire, with 2 five-horse waggon loads per acre, the prime cost of which is, £1. 2s. carriage £2. 10s. in all £3. 12s. per acre, lays it on before harvest. The Derbyshire lime answers better than the kind brought from the neighbourhood of Doncaster; but the latter sort thought superior for building. Cultivates a good deal of turnips, all in broadcast; sold some this season, to be drawn, at £12. per acre. Uses bone dust, which answers well upon wet land. Yokes 2 horses in a plough, but sometimes, when the land is stiff, employs more. Wishes to sow as early as possible, as the harvest is rather late. Wages high, a good ploughman £14. per annum, with victuals and beer; labourers 10s. 6d. per week, with beer. In hay time and harvest gives them victuals also. Inclosing a great improvement, and increases population.

No common fields here, but thinks them bad things. A great deal of waste land within a few miles of the town, which would be valuable if divided and inclosed. Leases generally granted here.—The Duke of Norfolk grants them for 21 years; where they are not granted, thinks there is no encouragement to improve. Thinks there should be no restrictions in any lease, but for the last 3 years.—Provisions high, beef and mutton 4½d. veal 5d. and much higher in spring. Is not fond of paring and burning, unless in particular situations. Drains a great deal; in wet bottoms, lays brush-wood first, and stones above. Roads generally bad, but more attention paid to them since the mail-coach came this way.—Thinks the agriculture of the neighbourhood is greatly improved by trade and manufactures; they provide a large quantity of additional manure, and a good market for the produce, which much more than compensates for the increase of wages occasioned by them.

Waited upon John Booth, Esq. of Brush-house, about three miles from Sheffield, who obligingly favoured us with the following information.

Soil in this neighbourhood a hazle loam, well calculated for turnips—Climate middling—Average gage of rain 33 inches in a season, which is about a medium betwixt what falls in Lancashire, and on the east coast. Large proprietors are the Duke of Norfolk, Earl Fitzwilliam, and Countess of Bute; but there is a number of small freeholders. Farms small; in the neighbourhood of Sheffield, from 20 to 60 acres. Near that place three-fourths of the land is in pasture, and at a greater distance, about one-half. Some red clover, and rye-grass is sown, but the general practice is to sow white clover, with hay-seeds. The pasture grass is chiefly stocked with milk cows, and a few sheep, which are mostly of the Peniston breed. Little land is watered, but approves of it when it can be conveniently practised. Rotation of crops most approved of is turnips, barley, clover, and wheat. Fallow practised, but not on a large scale, unless in case of turnips. A great deal of bone dust used, 40 bushels to the acre, at 18d. per bushel; but has done it to the extent of 80 bushels per acre, with advantage; ploughs with two horses abreast; does not approve of the large carts and waggons, and thinks carts of a smaller construction of more utility to the husbandman. Wages for labourers are 10s. per week, and a free house. Mowing corn, from 6s. to 10s. per acre, grass 3s. No want of hands for harvest work; approves of paring and burning on old grass land, expence 21s. per acre. Country not sufficiently wooded, a great deal more wanted. Duke of Norfolk has about 1500 acres of wood in this parish; cuts once in 24 years, and leaves a number of trees of different ages each cutting.

Thinks if the waste lands and moors were divided, planting upon them would thrive and do well. Roads might be greatly improved; surveyors recommended by a vestry meeting; and reports made of the work annually. Farm houses and offices improperly constructed, and badly situated; often built at random, without any attention paid to the situation or convenience of the farm. Most part of the proprietors here grant leases, and think it impossible to practise good farming without them. Thinks many of the covenants in the leases are destructive to improvements; manufactures of great use to agriculture; no agricultural societies here at present; but remembers one formerly at Sheffield, which subsisted for a number of years. Several inclosing bills have lately passed for fields in this neighbourhood, which have produced very beneficial consequences. Thinks people have a turn for improvements.

Information from Mr. Odey, at Darnhill near Sheffield.

Soil in general loamy, and inclined to moisture, and the land in the immediate vicinity of Sheffield chiefly employed in pasture, hay, and gardens; all grains cultivated, but no regular rotation. Little land fallowed in this neighbourhood; manures used, are stable dung, lime, and bone dust; fresh land when taken up, is sown with wheat, then beans; and continued under the same crops as long as possible. Difference betwixt common field and inclosed land of similar quality, £ 25. per cent. Paring and burning practised, even upon the stubbles, which are often pared every year. The country not sufficiently wooded, owing to the great demand from the manufacturers. Leases generally granted from 11 to 21 years. Restricted in general by them, to keep two-thirds in grass; manufactures have a good effect on agriculture, but the manufacturing interest preponderates so much here, that agriculture becomes only a secondary object. Thinks that tithes are a hardship, and a great bar to the improvement of agriculture. When Mr. Odey first occupied this farm, only four loads of wheat were produced upon the acre; but now owing to the improvements made by him, at a great expence, twelve loads are produced.

Bone dust, or as it is here called, hand tillage, is used to great extent upon all the fields for twenty miles round Sheffield. Bones of all kinds are gathered with the greatest industry, and are even imported from distant places. They are broke through a mill made for that purpose; are sometimes laid on the ground without any mixture; but it is supposed most advantageous to mix them up with rich earth, into a compost, and when fermentation has taken place, is the proper time to lay them on the ground. We also heard of another manure, which can never be more than a local one, viz. the refuse of hogs bristles from the brush manufactories. One gentleman informed us that he had manured four acres with this refuse, and that its effect greatly surpassed that of street dung, which the rest of the field had been covered with.

Leaving Sheffield, we came to Rotheram, which is a place famous for iron works. Examined several farms in the neighbourhood, which are generally in good order, particularly that of Mr. Taylor at Canklaw Mills. This farm is held upon a lease of 21 years from the Duke of Norfolk, and appears under excellent management.

Mr. Taylor deals largely in the turnip and grass husbandry. His land intended for turnips next season had, when we were there, (November 9th) got three ploughings, and appeared almost as clean as many summer fallows. His inclosures are in capital order, all hedges being neatly dressed, and completely fencible. Keeps a great many sheep, which are of the Dishley breed, and his pastures are of fine quality, being as close at the bottom as if 10 years old, although but newly sown down.

At Aldwark near Rotheram, we received the following information from Mr. Wigfull.

The soil about two or three miles round this place, is in general a rich hazle loam, and the climate is warm and dry. The principal proprietors are the Duke of Norfolk, Duke of Leeds, Earl Fitzwilliam, Earl of Strafford, Mr. Foljambe, and the Messrs. Walkers. But there are also a great number of small proprietors. Farms small in size, being mostly from 20 to 70 acres, and kept nearly in equal proportions of pasture and tillage. The grasses cultivated, are chiefly white clover and hay-seeds. Red

clover is sown by itself, and reserved for seed. Not many cattle or sheep bred in the neighbourhood, but a good number of horses since they advanced in price. All kinds of grain are cultivated here; and the general rotation is fallow or turnips, barley, clover, and wheat. The manures used, are stable dung, rape dust, bone dust, horn shavings, &c. Land mostly inclosed, which Mr. Wigfull thinks has increased the value of land one-fourth. The wages here are high; ploughmen 10s. per week, besides drink. Labourers eighteen pence and two shillings per day. Farm houses and offices are very improperly situated. They ought to be placed, if possible, in the middle of the farm, and not in a corner, as at present. The public roads are generally good, but a number of the by ones are in miserable order. Manufactures of iron and steel, are carried on in the neighbourhood to great extent, which are found to produce good effects upon agriculture, by increasing the riches of the country, and consequently affording a ready market for every article the farmer raises. The people have a great turn for improvements, but their genius is cramped for want of leases, and by injurious restrictions laid on them by the proprietors. Tithes are generally drawn here in kind, both small and great. Mr. Wigfull suggested that it would be a great improvement in other places of the country, to introduce the sowing winter tares, which are excellent spring food for horses when their keep is very dear; and was likewise of opinion, it would be a great improvement in his own neighbourhood, if the corn was cut lower, which would not only take the crop up much cleaner, but also be the means of accumulating a large additional quantity of manure.

Mr. Wigfull was of very great service to us during our stay in the neighbourhood, and was the means of introducing us to a large company of intelligent farmers, at the house of Mr. John Hall, at Icklea, from whom we received most interesting information. We here give an abstract of it.

The majority of farms are small, and about two-thirds of them kept in tillage. A variety of grasses are sown; such as red and white clover, trefoil, rye grass, and above all, hay-seeds. These seeds, when intended for pasture, are sown very thick, no less than eighteen pounds weight white clover, and three quarters of hay-seeds, to the statute acre. Cattle are of the long horned breed, but most of the pasture is eat by sheep of the Bakewell kind; which breed is fast spreading in this part of the country. Very little land watered here; but the practice thought advantageous, and in proper situations esteemed of equal value to a top dressing of manure. All sorts of grains are cultivated, red wheat especially. Rotation; turnips upon the dry land, otherwise summer fallow, barley, clover, wheat, oats, or pease; four crops generally taken to a fallow. A great deal of lime used; applied at the rate of one hundred bushels per acre; expence 50s. Almost the whole land inclosed, which is supposed an advantage equal to one-third, and is the means of increasing population. Paring and burning much practised; expence 21s. per acre.

Farm houses and offices, in general very badly constructed, and improperly situated. People have a great turn for improvements, but are prevented by the following obstacles; want of leases; restrictions in the mode of management, which hinders the farmer from exerting his abilities, and introducing new practices; and tithes, when taken in kind. Mr. Hall informed us, that the tithes of wheat were sometimes commuted for fifteen shillings per acre, when the landlord's rent was only twelve shillings.

Mr. Hall has a rape mill; and manufactures a great deal of oil, which is generally sold to Lancashire. Purchases rape seed in the East Riding, and Norfolk; present price £3 per quarter, and five quarters often raised upon an acre.

Having a letter from Sir John Sinclair to Earl Fitzwilliam, we proceeded to Wentworth-house, but unluckily his lordship was in Northamptonshire. Delivered the letter to Mr. Bounds, his chief steward, who paid us every attention, and from whom we received full information relative to the management of his lordship's large and valuable estate. Mr. Bounds was at the trouble of bringing some of the principal farmers in the neighbourhood to us, from whom we received full and accurate answers to the different queries we had circulated. The following is the substance of the intelligence we received.

Soil variable; both clay upon a wet bottom, and a hazle loam; farms small, not many above £100 rent, and chiefly kept in tillage, not above a fourth part being in pasture; grasses cultivated are natural hay-seeds, white clover and trefoil; little red clover sown; both sheep and cattle fed upon the pastures. The cattle are generally of the Craven breed; sheep partly of the polled sort, and a good many from the moors above Peniston. General rotation of crops is turnips, barley, clover, and wheat. Where the land is strong, it is clean summer fallowed, and sown with wheat at Michaelmas; of all the manures that are used, bone dust is found to have the most effect; 60 bushels applied to the acre, and often bought so high as 20d. per bushel. Ploughs and carts are of the common sort; the carts are 7½ feet in length, 3 feet 2 inches in breadth, and 2 feet 2 inches deep, and will hold 1 chalders, or 32 bushels, generally drawn by 3 horses in a line. Few oxen wrought; Lord Fitzwilliam uses some, but the farmers use horses from their being most expeditious. Land mostly inclosed, the advantages of which are great, being estimated equal to £25 per cwt.; the inclosures are small, being regulated by the size of the farms; few townships but what have common fields, and these ought to be divided. Not much waste land, but what is of this kind is highly improvable. Wages very high; ploughmen £14 a year, besides victuals, drink, and washing; labourers 2s. per day in summer, and 16d. in winter. Drains of various sizes, and filled with stones, but the extent depends upon the goodness of the farmer. A good farmer always drains where necessary, a bad one neglects it in all situations. Paring and burning practised upon strong rush land, but thought bad husbandry upon light soils. A good deal of wood in the country, but from being too early cut, woods are turning weaker and weaker; cut one in 21 years, a part being left each cutting; some trees left to the age of 60 years, a few particular ones longer, mostly used in the collieries. Provisions at present high; beef and mutton 4½d. per lb.; wheat 6s. 6d. per bushel, barley 5s. oats 3s. and beans 6s. Farm houses and offices, in general, properly constructed for the size of the farms and stock kept. Leases seldom granted. No agricultural societies; but the people have a great turn for improvement, the principal obstacle to which is paying tithes in kind. There are few estates in the neighbourhood exempt from paying both small and great tithes, but they are more usually compounded for than drawn in kind. The greatest benefits that have been produced from inclosing open fields and waste land, are in those places where the great and small tithes have been commuted for, either in land or money.

From a paper communicated to us, we can speak with precision upon the nature of the covenants that are here entered into by landlord and tenant.

The tenant covenants to keep all the buildings and fences in repair ; to pay all parliamentary and parish taxes ; not to plough up grass land without consent of the landlord ; not to take more than 3 crops of corn before a fallow ; to lay 12 cart loads of dung upon every acre so fallowed ; not to sell any hay, straw, or other fodder from off the premises, but eat and consume the same thereupon ; to spread all the manure arising from the premises upon some part thereof, and leave the last year's manure thereupon. The landlord covenants to allow the tenant, on quitting his farm, which is by the custom of the country at Candlemas, what two indifferent persons shall deem reasonable for what is generally called full tillage, and half tillage, being for the rent and assessments of his fallow ground, the ploughing and managing the same ; the lime, manure, or other tillage laid thereon ; the seed sown thereupon, the sowing and harrowing thereof ; also for the ploughing, harrowing, manuring, and managing any turnip fallow, which he may leave unsown ; also for any clover seed sown on the premises, and the harrowing and rolling in of such seed ; and for every other matter and thing done and performed in a husbandry-like manner on such fallow lands, in the two last years of the terms ; also for the last year's manure left upon the premises ; and for any manure and tillage laid upon the grass land.

The custom of the country is now so well established for the tenant to have all the before-mentioned allowances on quitting his farm, that the land is at all times in a proper state of cultivation, and the in-coming tenant always prefers paying such allowances, to the entering upon a farm in an impoverished and mismanaged state.

Westworth House is situated between Rotherham and Barnsley, and is one of the largest and most magnificent houses in the kingdom. It is unnecessary here to give any description of it, as Mr. Young, in his Northern Tour, has already given a very just and complete account of it. It is surrounded by a park, which we were told consisted of 1,500 acres, carrying grass of the most exquisite quality, and upon which large droves of cattle, sheep, and deer are fed.

Returning back by Rotherham, we proceeded for Parkhill, the seat of Michael Angelo Taylor, Esq. M. P. We were received by Mr. Taylor with the greatest kindness : walked over a number of the adjoining fields with him, and received much valuable information from him, respecting the husbandry of the neighbourhood.

The soil here is thin, rather wet, and upon lime-stone. Few turnips are cultivated, and they are all sown broadcast. Mr. Taylor shewed us a mill for breaking bones, which are in great repute in this neighbourhood, and found to answer better upon lime-stone land than any other manure. Sixty bushels are applied to the acre. Has very little effect the first year, but afterwards operates for a considerable time—we think 10 or 12 years. Prime cost at the mill 18d. per bushel, and the demand greater than can be supplied. Road from Rotherham, till we came near Parkhill, very bad, and all cut into deep tracts : a considerable part of it was almost impassable. Saw some common fields of good natural quality, near a place we think called Maltby, which were under very bad management.

Substance of information received from Mr. Arch. Taylor, farmer at Letwell, near Parkhill.

The soil is a thin lime-stone, and the climate moderate. Farms in general too small, which Mr. Taylor thinks is the cause they are occupied by a number of poor, bad farmers, as they are not worth the notice of a man of any property. Two-thirds of the

land is kept in pasture, which is sown with common hay-seeds, white clover, and trefoil, and fed with the Leicester breed of sheep, and long horned cattle. Mr. Taylor does not think the long horned kind good for milk, but considers them to answer best upon his thin, wet ground. Mr. Taylor's mode of farming is to plough six years, and graze five years. When he breaks up his swarth, applies $2\frac{1}{2}$ chalders, or 80 bushels of lime to the acre, and sows turnips for the first crop, 2d. barley, 3d. clover, or pease and beans, 4th. wheat, 5th. clean summer fallow, 6th. wheat with grass seeds. The first year of the grass it is pastured with sheep, and manured in the following winter; next year cut for hay, from which a good crop of seeds is got; 3d, 4th, and 5th years, it is pastured with sheep. Mr. Taylor said it was not usual to grant leases, but thinks a farmer has no encouragement to improve, wanting them. Lands in this neighbourhood subject both to great and small tithes, which, Mr. Taylor says, damps every spirit of improvement. Mr. Taylor uses a great deal of bone dust, 50 bushels of which, mixed with some short manure, is sufficient for an acre. Although it is a very expensive dressing, yet as it is very durable, he considers himself well paid for the application. Does not much practise paring and burning, as he considers it to impoverish the soil. The land is all inclosed, and has been so for near one hundred years. Size of inclosures from 5 to 20 acres. Cannot say whether inclosing has decreased population or not, being so long since it took place.

From Parkhill to Bautry the road is good. Passed by Sandbeck, the seat of the Earl of Scarborough, and found the name of the place corresponded with the nature of the soil.

Information at Bautry.

Soil generally of a sandy nature, well adapted for turnips, carrots, and other drilled crops. The land is mostly in tillage, and occupied by small farmers and tradesmen. Mr. Fisher informed us, he sows red and white clover, and rye-grass; but that the greatest part of the pastures are sown with hay-seeds, the people having an antipathy to rye-grass. Rotation of crops here, are turnips, barley, clover, and rye, which answers well upon soft, sandy soil. Manures are dung and bone dust. The fallows are limed with two chalders, or sixty-four bushels to the acre. Ploughs wrought with two horses abreast. Mr. Drummond here works oxen. Saw one drawing his water-cart, and working quite calm and docile. The carriages generally used, are upon six-inch wheels, and drawn with three or four horses. Lands all inclosed, which sets for double rent; but the inclosures by far too small. The land here does not stand much in need of draining, but where it is wanted, the drains are filled with brick. Paring and burning practised upon new taken in land. Expence, when done by the plough, 5s. per acre, 13s. when done by the hand, and 2s. for spreading. Few leases granted. Mr. Fisher informed us he took a farm, and, upon the faith of its not being raised, made considerable improvements; but as soon as these improvements were discerned, the rent was raised immediately—therefore Mr. Fisher thinks the want of leases must always be a bar in the way of improvements. The tithes are commuted at about 8s. per acre. The great tithes belong to the Duke of Norfolk, and the small ones to the clergy. There was lately a society at Bautry for improving Agriculture, which did much good, but it has been given up for two years past.

Waited upon Mr. Drummond here, who is a complete gentleman-farmer, and has all his operations carried on in the most perfect and accurate style. His fold yard is

nicely constructed, and his offices are numerous and convenient. The fold yard is paved, and having a gentle slope to the middle, where there is a reservoir, with a pump fixed, into which all the moisture produced from the dung is accumulated, and drove out in a barrel daily to his pasture fields. Care is at same time taken to keep every drop of water that falls upon the houses from going to the dunghill, as spouts for carrying off the rain are placed round the whole fold. Mr. Drummond's attention to his manure cannot be too much commended, as in many places not the least care is paid to collecting it properly. In short, we venture to recommend Mr. Drummond as a most perfect pattern to every gentleman-farmer; although we have our doubts whether the expensive nature of his buildings are not too much; for being followed in the common routine of husbandry operations.

From Bautry to Doncaster, the land is of a light, sandy nature, upon a wet springy bottom. A great part of it has been lately inclosed, and the fences in general not thriving. Turnips very bad, and little care taken to have the land laid dry, as we observed much water standing on the fields.

Doncaster is a neat, clean town, and there is a deal of fine land in the neighbourhood of it.

Information received at Doncaster from Mr. Parkinson, and Mr. Foster.

There is a great variety of soils in this neighbourhood. A good deal of a sandy nature. Part of it a white clay; and others black earth, or a fine, sharp, light loam. The climate is mild and dry, and both seed-time and harvest are early. The farms are generally small, and mostly kept in tillage. The pastures have usually been sown with natural hay-seeds, but artificial grasses fast coming into practice. Few horses or cattle are bred, and the improvement of sheep but just beginning to be attended to. The rotation of crops upon the light land, is turnips, barley, clover, and wheat; and often a crop of oats taken after the wheat, because there are no leases. Upon the clay land, a clean summer fallow, barley, clover, and wheat, and often wheat taken as the first crop in place of barley. Manures used, are stable dung, lime, street dung, bone dust, rape dust, and pigeon dung—about 40 bushels of the last laid upon an acre. Lime applied to the fallow, from 60 to 100 bushels per acre—costs three-pence per bushel. No oxen are used; but this supposed to be owing to the smallness of the farms. Land mostly inclosed, which has produced great advantages. Inclosures from two to thirty acres, but chiefly small. There is a very large common field near Doncaster, of the finest land in England, which is at present let at 31s. 6d. per acre, that Mr. Foster thinks would be worth £3. 10s. if divided and inclosed. More than twenty freeholders concerned about it. Their common rotation is, fallow, barley, wheat, and rye, and grass-seeds are sown at different times with all the grains. Another common field is managed differently; the rotation is greatly superior, being turnips, barley, clover, and wheat—the turnips all broadcast, and the most part of them this season are bitter bad. Upon a third common field, another rotation is adopted, viz. fallow, one half of which is sown with wheat, and the other with barley; then beans and clover; lastly, wheat; and there is a meadow field, which, after being cut for hay, is pastured in common, from the 10th September to the 25th March—above 1200 acres are under the above mode of management. The proprietors are Sir Geo. Cooke, who possesses about one-half; Mr. Wrightson, who has one-eighth; and a number of small

freeholders. Very few leases are granted, which both Mr. Parkinson and Mr. Forster think detrimental even to the interest of the proprietor himself, as land in that case would set higher. No manufactory here, except one for coarse sacking; but where they do prevail, they are thought to have good effects in encouraging agriculture. Great improvements may be made upon the stock and land in this neighbourhood. Mr. Parkinson is of opinion, the horse for the team might be improved by the Derbyshire breed, and that the cattle might be improved, by crossing the Durham cows with the best of the Craven bulls.

With regard to sheep—The Bakewell sort esteemed best for all the sandy and limestone pastures, and a cross of the large Tees ewes with the Bakewell ram for the strong clay soils. Mr. Parkinson thinks the grass land is not sown down properly, being hitherto sown with nasty rubbish, called hay-seeds, whereas he is of opinion, it should be done with white clover, trefoil, and rye-grass; and where intended for cutting, with red clover and a small quantity of rye grass. Thinks also that turnips should be drilled, by which method the land is kept much cleaner, and hoed at far less expence than when broadcast.

Waited upon William Childers, Esq. at Cantley Lodge, and examined his improvements. The farm in Mr. Childers' own possession, which is tithe-free, consists of 320 acres, and by fallowing with turnips, and laying down with plenty of grass seeds, he has made uncommon and substantial improvements. Mr. Childers brings manure from Doncaster, and uses great quantities of lime. He has also a marley clay in his own lands, which he applies to the dry, gravelly, and sandy soils, at the rate of 80 and 100 cart loads to the acre, which produces good effects.

From Doncaster eastward to Thorn, the land is capable of greater improvement than any we have seen in Yorkshire. There is a great deal of common field, superior in quality to most land, and there is also large tracts of waste. At Hatfield there are very large common fields, the rotation upon which is turnips, barley, clover, wheat, and barley; and one of the fields not ploughed, but kept in meadow grass. We examined the turnip field, which consisted, as we were told, of 150 acres, and although of a soil exceedingly proper for that root, they were a crop not worth 20 s. per acre. We heard afterwards they were only valued at 15 s. The turnips were quite small—few bigger than an egg, and the ground in the most wretched and dirty condition. It appeared to us they had not been hoed at all, or at least very imperfectly, a large proportion was covered with weeds; and worse culture cannot be figured.

If the cultivation was bad, the manner of consuming them was still worse. The whole 150 acres were eating at once, and the stock appeared to be cattle and sheep of all ages and descriptions; such management needs no comment, it speaks for itself.

Between Hatfield and Thorn, there are great quantities of waste land, and much under water. Upon the whole, the land we have seen this day stands in the greatest need of improvement, which cannot be done without a previous division. The common fields to the eastward of Doncaster are abominably crooked and unequal. Some parts of the ridges being twice the breadth of another, and one solitary ridge of wheat often standing by itself—more wretched husbandry could not have existed a century ago.

We received the following information at Thorn.—The proprietors are chiefly small copyholders, holding of Lady Irwin. Farms mostly small, and the greater part kept in

tillage. The pasture generally employed in supporting farm stock, and a few cattle for the butcher. The soil is chiefly clay, and the climate moderate, but foggy and damp. Rotation upon the farm land is turnips, barley, clover, wheat, and barley; but in the common fields, every man sows what he thinks best. Some rape is sown, which is generally allowed to stand for seed. The common fields here set at 30s. per acre, besides public burdens; but from the goodness of the land, thought to be able to pay more, if they were divided and inclosed. A great deal of waste land in the three parishes of Thorn, Hatfield, and Fishlock, amounting at least to 4000 acres, which is all capable of great improvement. Wages high—ploughmen £15. and victuals; labourers 1s. 8d. and 2s. and no scarcity of hands. The tithes are either drawn in kind, or valued annually—7s. per acre is usually paid for corn fields, and a small modus taken for grass, hay, and turnip.

Left Thorn and proceeded northward to Snaith—most parts of the land till we came within two miles of that place, are exceeding wet, and large tracts little better than in a state of nature. The land, though wet and marshy, is generally rich strong soil.—Ridges much straighter ploughed than is generally the case over the West Riding, but kept by far too narrow and flat. Crossed the river Don upon a wooden bridge, a part of which turns upon a pivot, (and gives a passage for the numerous shipping that navigate this river). As we approached Snaith the soil turned as fine as could be wished.—Great quantities of turnips, and those of good quality.

Snaith is a small market town situated upon the river Aire, not far from its conjunction with the Don. The land round the place is of exceeding rich quality, and but moderately rented. We examined a farm occupied by Mr. John Latham, and found it exceedingly well cultivated. Mr. Latham upon his light lands practises a rotation that has already been often mentioned, viz. turnips, barley, clover, and wheat; but he follows out this rotation in a manner superior to most persons. His turnip crop this year, when so many other people's have failed, is good, and are set to a jobber from Leeds at £6. per acre, to be eat upon the ground. His turnips although not drilled, are all in rows, about sixteen inches wide, which enables him to hoe them with greater accuracy.—His method to do this, is to give the last furrow very broad, which takes all the seed when harrowed into the furrow, and so gives the field an appearance of regularity. Mr. Latham said this plan was fallen on by accident, which indeed is often the parent of many improvements;—when ploughing one of his fields some years ago, he ordered his servants to finish it that night. There being a feast in the neighbourhood, the ploughmen were anxious to be early at it, and so gave a furrow much broader than usual. When the young plants came up, Mr. Latham was surprised to see them in regular lines, and inquired into the cause of it; which pleased him so well, that he has since continued the practice.

Mr. Latham sows rape upon his wheat stubbles, that are next year to be turnips. His method is to plough the field as soon as the wheat is carried off, and sow the rape immediately, which is generally got down by the middle of September, and affords him feeding for his sheep in spring equal in value to 20s. per acre.

A part of Mr. Latham's farm is what is called warp-land, or land enriched with the sediment left by the river Aire, when its banks are overflowed. Upon such fields he does not venture to sow wheat, as it stands in danger of being perished; but from the richness of the soil great crops of spring corn are raised.

Mr. Latham is a most able and complete farmer; his fences are all good; the whole of his land clean; his pastures rich and luxuriant. We are happy to have this opportunity of expressing the high sense we entertain of his merit and abilities.

From Snaith to Ferrybridge there are a number of common fields, which were under no better management than those we have formerly described. We saw a large common field of turnips to the eastward of Kellington, which were middling good, but very imperfectly cleaned. At least 40 acres were stocked off at once, and cows, bullocks, young cattle, and sheep were feeding indiscriminately. Saw also upon this road some fields of rape intended for seed, which looked well.

Waited upon Richard Slater Milnes, Esq. M. P. for York, at his house at Fryston. From his information, and that of others, the following account of the husbandry in the neighbourhood of Ferrybridge is given.

The soil is composed of lime-stone, clay, sand, &c. in the vallies, and rich pasture, and meadow lands near the rivers. The land is chiefly possessed by large proprietors; such as Lord Mexborough, Mr. Mills, Mr. Crow, &c. Farms contain from 50 to 300 acres, and mostly kept in tillage. Large quantities of red clover and sainfoin are sown for cutting, which answer well; and white clover, trefoil, and hay-seeds are sown for pasture. Some lucern is sown, but the quantity inconsiderable; many horses are kept on account of the collieries, lime works, drawing vessels along the river Aire, and other purposes besides that of husbandry; which consume the red clover and sainfoin. The pasture inclosures are generally stocked with sheep; and the lands near the water side are eaten by milk cows.

Rotation of crops upon the clay land is, wheat, or barley upon the fallow, and afterwards oats, or beans. No more than two crops are taken to a fallow, unless the land is of superior quality. Turnips are sown upon the tithe land, and followed with barley, clover, and wheat. The manures used are, stable dung, pigeon dung, and sometimes bone dust. A great quantity of lime-stone is burned at Knallingly and Brotherton, which is laid on, from two or three chalders per acre. Ploughs are of the usual kind kept in the country, and generally drawn by two horses abreast. Carts with wheels of 3, 6, and 9 inches broad, and drawn by three, and by four horses in a line are used. Very few oxen are wrought, and those only by gentlemen. Land mostly inclosed, but the inclosures thought too small. Inclosing is reckoned to produce the following advantages. It enables the possessor to cultivate the land in a superior style, which in its open state, it was out of his power to do. From such cultivation a greater produce is obtained; and on the light soils the turnip, clover, and seed husbandry cannot otherwise be practised to advantage. Provisions are cheaper here than in the manufacturing part of the country, at least one halfpenny per pound. Roads, both turnpike and by ones, are in good condition. Sometimes the assessment for supporting them is 18d. per pound upon the valued rent. Much improvement has been made by draining, and great attention paid to it. The farm houses and offices are in general very inconveniently situated, most of them are in villages, which of course renders a number of them at a great distance from the land. Some leases are granted; but it is not the general practice to give them for more than one year. No modes of husbandry prevail here that would be of advantage to other places, except sowing sainfoin, which answers well upon all chalky, or lime-stone land. Some bills have passed for dividing common lands, which have produced great advantages. Plentiful crops have been raised at little expence, and an oppor-

tunity given of laying down the old going land into grass; also an exemption from tithes is procured by them.

We proceeded to Selby. 'This is a populous market town, situated upon the river Ouse, and was the birth place of King Henry I. on which account his father William the Conqueror built an abbey here. From John Foster, Esq. we received the following important intelligence relative to the agriculture of this part of the country.

The soil is various, part of it sandy, and part a hazle clay. The climate is moderate; the proprietors are Lord Petre, the Archbishop of York, and a great many copyholders. Farms are small, and kept in equal proportions of pasture and tillage. All sorts of grasses are cultivated; which are used both in breeding and feeding. Sheep are generally of the Northumberland kind, and the cattle of the short horned or Holderness breed. Great numbers of horses are bred. The rent of the land is from 5s. to 50s. per acre. Rotation of crops; when land is broke up from grass, flax is generally the first crop, then rape, afterwards wheat, and a fallow; but no fixed rotation is kept. Ploughs of the common kind, drawn by two horses are used; but a number of oxen are wrought in the waggons. There are no common fields in this parish, but many in the neighbourhood. The difference of value betwixt open and inclosed lands, is estimated at one-third, or 33 per cent. Here is a considerable deal of waste ground, which produces little or nothing at present, but is capable of great improvement. Strict attention is necessary in keeping the ditches clean, and letting the water off the fields, which are greatly hurt by rain water stagnating upon them; but as there are no spouts, little other draining is required. Provisions are plenty and moderate; roads tolerable, great improvements have lately been made upon them. Farm houses and offices are well enough constructed, but very improperly situated, as they are mostly in villages. A number of landlords do not grant leases, which is destructive to good farming.

Mr. Foster informed us that woad for dyers is raised in the neighbourhood of Selby, among red clover. When it is in full bloom, it is pulled by women and boys, who go before the mowers. It is placed in small heaps with the tops uppermost, and when completely dried, is put into the barn, and sold to the dyers from 15d. to 3s. per stone. Woad grows well on all lands fit for turnips, and is sometimes taken by itself as a crop.

Large quantities of potatoes are raised here. They are all of the kidney kind, and no less than seven or eight thousand tons are annually exported from the banks of the Ouse, for the London market.

A great deal of flax is grown near Selby, which is almost all cleaned and dressed in the country; a small proportion is allowed to stand for seed.

We received the following information from Mr. James Foster, Farmer at Wiston.

The soil is very indifferent; there is warp, occasioned by the sediment left by the overflowing of the river Ouse; there is loam, or a mixture of clay and sand, but not very deep, and also some clay and sandy soils. There are both large and small proprietors, and none of the farms are large. Land is employed both in pasture and tillage, generally in equal proportions. There is not much rye-grass sown, hay-seeds being more esteemed. Sheep are both bred and fed on the pastures, fleece weighs from 5. to 8lb. avoirdupois, and sold to the manufacturers in the western parts of the Riding, at 7d. and 8d. per pound.

The rotation of crops is, fallow, wheat, beans, and oats; or turnips, barley, grass seeds, and oats, as suits the soil. Some rape is sown; the land, after being fallowed and dunged, is sown about the first of September, with half a peck or three quarters of seed per acre; the produce is from four to five quarters, and sold from 45s. to 60s. per quarter. Mr. Foster sows a considerable quantity of flax; the produce per acre, is from 24 to 40 stone of 14lb. avoirdupois of rough dressed flax, and sold from 7s. to 10s. per stone. Little or no seed is preserved. The flax is all scutched by the hand, there being no mills for that purpose in this part of the country. Dung is brought by water from Hull; prime cost and expence, is nearly £ 6. per acre. Lime is used in large quantities, 140 bushels being applied to the acre, expence £ 50.

There are no common fields. He thinks, on the general question, that inclosing renders land of one-third more value. Wages run from 16d. to 2s. per day—no drinkings allowed, excepting in harvest. Wheat is cut with the sickle, at the rate of 7s. per acre; but he is of opinion, it would be a great advantage and profit to cut it much lower than is usually done, supposing the expence should be more. Barley and oats are cut with the scythe—expence of cutting, binding, &c. 5s. per acre. There are few covered drains, there being no springs; but great occasion for ditching and griping to carry off the top water. Few leases are granted; and Mr. Foster thinks, in the general, that these are absolutely necessary, where improvements are carried on. He is of opinion, he would be able to give more rent for his farm, if he was not under restrictions, and that no restrictions ought to exist in a lease, but for the three last years.

The people have a great turn for improvements; and he knows of no other obstacles, but the above two, and the mode by which tithes are at present paid. No inclosing bills have lately passed for land in this neighbourhood; but, from the advantages he has seen take place in consequence of such bills, he is of opinion, that all the waste land in the kingdom ought to be divided immediately.

We proceeded for Tadcaster. Great part of the country is upon a lime-stone, and lies very well: but the ridges in general are too flat, and no attention paid to letting off the water. We saw several common fields. After passing Sherborn (at which place great quantities of the Winesower plum grows), the country appeared very thinly inhabited; few or no houses being to be seen, till we arrived in the immediate neighbourhood of Tadcaster.

At Tadcaster we were recommended to a Mr. Potter, as one of the best farmers in that place; and we found that his practice was accurate and correct, in the highest degree. We received the following information from him.

The soil is a dry lime-stone; the climate kindly and moderate. The proprietors mostly have large estates; but the farms are small, few extending to 300 acres. The greatest part of the land is in tillage, not above one-third being in pasture. The grasses sown, are red and white clover, trefoil, and sainfoin. Rye-grass is out of repute, and hay-seeds fast following. Sheep are kept upon the pasture land, and cattle fed upon turnips. No land is floated or watered. General rotation of crops is, turnips, barley, clover, and wheat; often a crop of oats taken after the wheat. The manures used, are dung, made upon the farm, and gathered at Tadcaster; some lime brought by water from Hull, and horn shavings from York. The ploughs are of the Dutch kind, and drawn by two horses abreast. No oxen used, but those kept by Lord Hawke. The sowing of wheat commences about the end of September, and

continues all the month of October. Spring crops are sown as early as possible. The harvest is early. Here are some common fields; and Mr. Potter supposes, the difference of value betwixt open and inclosed land to be one-fourth. Inclosures are small, few exceeding ten acres. There is a good deal of waste land, some of which is under division, and capable of great improvement. The wages of a labouring man is 9s. per week; ploughmen get £10 per year, besides victuals and washing; the head man gets equal to £30 per year. Hours of labour are 10 in summer, and 7 in winter. Paring and burning are very seldom practised. A great quantity of the Winesower plum grows in this neighbourhood. Farm-houses and offices might often be more conveniently situated. Mr. Potter thinks it would be highly beneficial to the public interest, that all land was set under lease; and further thinks, there is no necessity for imposing restrictions on the good farmer, as he will manage much better wanting them; and as for the bad farmer, he cannot be mended by them. The people here have a great turn for improving their lands; but have no opportunity of doing this to purpose, from the want of leases. He thinks the small size of the farms serves to retard good management.

We received also information from another gentleman, about the husbandry in the neighbourhood of Tadcaster; but as he only corroborates what Mr. Potter has already said, it is unnecessary to repeat it.

Waited upon Mr. Beck, steward to Lord Hawke, upon his estate of Scarthingwell and Towton.—His lordship has taken about 1,600 acres into his own hands; and is very properly putting it into good order, by fallowing, manuring, and laying parts of it down with grass seeds, with a view to set it in proper sized farms to substantial tenants. Besides the manure raised on this farm, his lordship has expended yearly above three hundred pounds in purchasing manure, principally dung, from the towns and villages in his neighbourhood, and by water from Hull, York, &c. We use the freedom to recommend to his lordship's attention, that the land now in hand, will make four very complete farms; and that, after the outlines of each are marked out, the farm-houses and offices should be placed as near as possible in the centre of each farm; keeping always in view the convenience of good water: an attention to these things is an important object of agricultural economy: and we now understand Lord Hawke has not only always had these ideas, but that specific spots have long since been set out, where the buildings will at a proper time be erected.

We select from the information communicated by Mr. Beck, and Lord Hawke, the following particulars.

The soil is of many different kinds: it is good loam in general: there is also clay upon lime-stone; strong clay upon a blue till; hazle earth upon sand; and about 50 acres of moss, or peat earth, upon Lord Hawke's estate. About a fourth part is kept in pasture, though less pasture in general is kept. He cultivates sainfoin, red clover, and trefoil, with white clover, and hay-seeds. He bred 350 sheep last year, and has this year increased his breeding ewes to 440: they are of the Oxford and Gloucestershire polled breeds; they have a cross also of the Bakewell and Fowler breeds; and the wethers are fed off when shearing, at 38s each. He folds his ewes always from May-day to Michaelmas. He feeds also a few Scotch and Irish cattle. The general rotation of crops is turnips, barley, clover, and wheat. His plan, now adopted, is to sow half

his clover land with twelve pounds of red clover per acre; to mow it once, and then feed it. The other half is sown with 6lb. of white clover, 3 lb. of rib-grass, and 6lb. of trefoil per acre, and fed, but not mown. By this rotation of crops, red clover is sown but once in eight years on the same land. His plan is to lay down one hundred and fifty acres to sainfoin, the seed of which he sows with his barley; and has sometimes sown it on a clean fallow. When the ground laid down with sainfoin would have been broken up for wheat had it been sown with clover, he breaks up an old worn-out pasture ground, and sows it in the spring following with oats; after which it is fallowed, and falls regularly into course, instead of the ground sown down with sainfoin. The manures used, are rape dust, pigeon, farm-yard, and bought dung, by Lord Hawke; soot, rape, bone-dust, and farm-yard dung, by Mr. Beck. Lord Hawke ploughs with two oxen abreast, without a driver, and sometimes with horses, but depends principally, and almost entirely on oxen, for his ploughing and harrowing. His land in hand is all inclosed; inclosures vary from 8 to 30 acres. There are some small pastures from 5 to 8. We think small arable inclosures hurtful in a corn country; and Lord Hawke is altering and enlarging the size of his fields, from 15 to 20 acres. Mr. Beck is of opinion that inclosing is very beneficial, and never can decrease population. Lord Hawke had land in a common field, for which he got only 5s. 9d. per acre, and can let the same land, when it is now divided and inclosed, at 20s. Wages are high; house servants cost in board and wages £ 30 per annum. Draining is much required here; but for want of a law to oblige neighbours to clean out their contiguous ditches, it cannot be done to advantage; although Lord Hawke is attempting it, and has induced many to drain with him. Paring and burning are practised on old grass land, and thought an excellent method of breaking up all coarse sward. Lord Hawke approves of it on low grounds, but on high ground, thinks burning unnecessary, and rather detrimental. The old farm-houses and offices are badly constructed, and inconveniently situated, being built in villages; but Lord Hawke has built for his own use a large farm-yard, conveniently formed and situated, with a threshing machine, a mill for grinding rape-cake, and stabling for twenty-five horses, and thirty-two oxen; besides cow sheds, barns for hay and corn, &c. The whole is walled in by walls nine feet high, and coped with stone, and divided by the barns, stables, &c. into four yards; two of which have ponds, besides the pumps. The stables for horses are placed on the east and west side of the farm-yard, which is free from buildings on the south, and sheltered on the north by the barn and ox-houses, which separate it from the principal stack-yard. This yard is divided from the two others by open hay-barns, tiled whitish slate caves, and with chimnies also of brick, to let out the steam. The average of the boarded granaries, amounts in length to one hundred and sixty feet, and in breadth to twenty-one. There are trap-doors contrived in them, to let down the corn when sacked, into wag-gons, which may be loaded and locked up at the same time. The corn is stacked on wooden frames, placed on stone pillars and caps. Lord Hawke still proposes to make further improvements to it, and to pull down a cottage now placed at the western extremity of it, and build a house in its place for his steward. The whole covers from an acre to two acres of ground. Mr. Beck is of opinion, when land is set it should be by leases of 21 years at least; and that shorter ones are productive of bad consequences to both parties, as time is wanting to improve and reap the benefit. Mr.

Beck thinks that restrictions in the lease, where the tenant is a man of abilities and property, are a bar to improvement. But for the safety of the proprietor, it is necessary that one-third of the farm be left in grass, properly laid down after fallow or turnip, with a sufficiency of seeds, as might be mutually agreed upon.

A particular species of plum grows here, and in the neighbourhood, called the Winesower. It grows well, both upon gravel and lime-stone, is hardy, a good bearer, and answers upon any soil; but does not bear so well, nor its flavour so good on any, as on lime-stone or gravel. On a strong deep land, the trees run too much to wood, and do not bear fruit in proportion. These plums blossom better than any other sort, and are produced from suckers. The fruit sells from 21s. per peck, when sound and good, to 4s. 6d. when cracked and damaged. They are very easily hurt by rain.

Left Tadcaster, and took the road westward to Harewood. Observed some common fields by the way. The land in general is upon a wet bottom; and from the late rains, and the little attention paid to clearing out the furrows, is in a very bad situation.

We delivered a letter to Mr. Samuel Poplewell, steward to Lord Harewood, and received satisfactory information from him. Harewood is a neat little village. His lordship's residence is a little distance from it. He grants no leases, but is esteemed a kind landlord.

The following is the substance of information received from Mr. Poplewell.

The soil is generally clay, upon a bottom retentive of moisture; the climate showery and wet. Land is chiefly possessed by large proprietors, and occupied by tenants paying from £ 20. to £ 200. yearly rent. It is employed both in pasture and in tillage, in proportions nearly equal. The pastures are mostly eaten by sheep, which are purchased from Northumberland; their fleece sells from 3s. 6d. to 4s. Many Scotch and Irish cattle are fed upon the sides of the river Wharfe. Upon the tillage land two crops are generally taken to a fallow, and turnips sown upon all the fallows proper for them. Mr. Poplewell drills his turnips, and has never missed a crop since he practised that method. The manures used are, home made dung, rape dust, malt coomhs, and dung and soot from Leeds. Little lime is used, excepting on new broken up land. Ploughs are generally drawn by three horses in a line. No oxen are used for work, excepting a few by Lord Harewood. Some rape is sown, which is often eaten by sheep, but sometimes stands for seed. Here are no common fields, but there are some in the neighbourhood, which he thinks should be divided. He estimates the difference betwixt the value of open and inclosed land, to be at least 25 per cent. He also is of opinion, that it would be of great service to agriculture, if all lands were set under lease; and that if these were granted, there would be no necessity for restrictions, unless during the concluding years. A bill passed about three years ago, to divide a common in this neighbourhood, which has produced beneficial consequences; and Mr. Poplewell is of opinion, most part of the waste land in the Riding might be improved, by planting Scotch firs upon it.

We arrived at Wetherby, which is a great thoroughfare on the London road. Here we received the following information.

The soils in this neighbourhood are lime-stone and strong clay. There are a few small freeholders, but the land almost wholly belongs to the Duke of Devonshire.

Farms are generally small, the most part not exceeding £30. per annum. Rent is about 20 s. per acre, and the public burdens. Rotation of crops upon the lime-stone is, turnips, barley, clover, and wheat; on the clay, fallow, wheat, and beans. The manures used, are great quantities of rape dust, price 2 s. 4 d. per bushel; horn shavings from York, soot, and all the dung that can be collected at home. Lime is applied to the fallow, 100 bushels to the acre; it costs 9 s. 6 d. per chalders of 32 bushels. Ploughs are of the common kind, and drawn by two horses upon the lime-stone, and by three and four upon the clay land. No oxen are used. Harvest is early; begins generally about the first of August, and is all finished by the middle of September. The land is all inclosed; the size of inclosures from 3 to 12 acres. Wages are high; ploughmen, that are masters of their work, get fifteen guineas per annum, besides victuals; and labourers never less than 18d. per day, and more in harvest; no scarcity of hands to reap the crop, excepting in the year 1792. The corn is mostly cut with the sickle; wheat is done for 7s. per acre. Provisions are plenty, but high priced. Farm-houses and offices are improperly situated, as they are all placed at the corner of the lordship.

The Duke of Devonshire formerly granted leases, but now intends to act otherwise; which we were told would be a great bar to improvements. The covenants that formerly subsisted were, to keep two-thirds in grass. Tithes are generally commuted here, and 7 s. per acre paid in their place.

In our route northward, we again visited Boroughbridge and Knaresborough; and received additional information, relative to the husbandry practised in their respective neighbourhoods.

We arrived at Rippon.—This is a place of great antiquity; being, it is said, incorporated by King Alfred; and is a pleasant and well built town. The river Ure was made navigable to this place about twenty years ago, and a number of vessels are employed thereon, to the great convenience and benefit of this place and neighbourhood.

We received the following information from Mr. Peacock, at Lendrick near this place.

The soil near Rippon is partly of a sandy nature, and partly strong clay upon a lime-stone; the climate healthy, and moderate. Estates are generally large, and farms of various sizes, from 20 to £300. yearly rent. The lands are mostly in grass and meadows, little more than the fourth part being kept in tillage. Artificial grasses are just beginning to be introduced into the husbandry of this neighbourhood. A few cattle of the short horned kind are bred, and a good many long woolled sheep, which when fatted at two years of age, will weigh 25 lb. per quarter. The rotation of crops is, turnips, barley, clover, hay-seeds, and wheat, upon the light and sandy soils; and on the strong soils, fallow, wheat, and beans. Lime and common dung, with a little rape dust, are the only manures used. A large heavy plough, drawn by 4 and 6 horses, yoked in pairs, is employed upon the strong lands. Upon the light soils, a smaller plough drawn by two horses is used. The country is mostly inclosed. Inclosures are from 5 to 40 acres. Mr Peacock thinks, land when inclosed is of double value, to that of similar quality, when lying in common field. There are some thousand acres of waste or common in the neighbourhood; most of which is capable of great improvement. Wages for labourers are at 2s. per day in summer, and from 1s. to 1s. 4d. in winter. Little of the country requires draining; but where this improvement is necessary, it

is well attended to, plenty of materials for this purpose being at hand. The average price of butcher meat is $3\frac{1}{2}d.$ per pound.

Farm-houses and offices lately erected, are in general good, and conveniently situated; but those that have stood long are not so. Mr. Peacock thinks, that the principal obstacles to improvements are, the want of leases of a proper duration, and the restrictions from ploughing up the old grass fields, which effectually prevents any new systems of husbandry from being introduced.

No. XII.

STATE OF THE WASTE LANDS IN YORKSHIRE, CALCULATED BY
MR. TUKE, JUNIOR.

	Capable of cultivation, or of being converted into Pasture.	Incapable of being im- proved, except by planting.	Total.
<i>Waste lands in the North Riding.</i>			
The Western moor lands — —	Acres. 150,000	Acres. 76,940	Acres. 226,940
Eastern ditto — —	60,000	136,625	196,625
Detached moors, or waste, in the country —	18,435	— —	18,435
Total —	228,435	213,565	442,000
<i>Waste lands in the West Riding.</i>			
The high moors — —	200,000	140,272	340,272
Detached moors, or waste, in the country —	65,000	— —	65,000
Total —	265,000	140,272	405,272
<i>Waste lands in the East Riding.</i>			
Detached moors, or waste, in the country —	2,000	— —	2,000
In the North Riding — —	442,000		
West Riding — —	405,272		
East Riding — —	2,000		
Total waste lands in Yorkshire —	849,272		

THE END.

4

GENERAL VIEW
OF THE
AGRICULTURE
OF THE COUNTY OF
WESTMORELAND.

2

GENERAL VIEW
OF THE
A G R I C U L T U R E
OF THE COUNTY OF
W E S T M O R E L A N D,
WITH
OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

BY ANDREW PRINGLE.

Gt. Brit
DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE
AND INTERNAL IMPROVEMENT.

EDINBURGH:
PRINTED BY CHAPMAN AND COMPANY.

M,DCC,XCIV.
W. H.

S455

A2

v.6

no.2

A D V E R T I S E M E N T.

THE following communication, respecting the present state of husbandry in the county of Westmoreland, and the means of its improvement, drawn up for the consideration of the Board of Agriculture, is now printed, merely for the purpose of its being circulated there, in order that every person, interested in the welfare of that county, may have it in his power to examine it fully before it is published. It is therefore requested, that any remark, or additional observation, which may occur to the reader, on the perusal of the following sheets, may be transmitted to the Board of Agriculture at its office in London, by whom the same shall be properly attended to; and, when the returns are completed, an account will be drawn up of the state of agriculture in Westmoreland, from the information thus accumulated, which, it is believed, will be found greatly superior, to any thing of the kind, ever yet made public.

The Board will probably follow the same plan, in regard to all other counties in the united kingdom; and, it is hardly necessary to add, will be happy to give every assistance in its power, to every person who may be desirous of improving his breed of cattle, sheep &c. or of trying any useful experiment in husbandry.

INTRODUCTION.

GREAT Britain had long availed herself of her naturally fortunate position for commerce, which, encouraged by every means that the wisdom of the legislature could devise, had been carried to an extent hitherto unequalled in the universe; and the industry of her inhabitants, assisted by the fostering hand of government, had brought many branches of manufactures to the highest state of perfection; while the cultivation of her fields was left to the feeble exertions of the husbandman, aided only by bounties on the raising of flax, and on the exportation of corn. It was reserved for our days to behold a board, composed of the first Officers of the State, and of persons equally respectable for high rank, distinguished abilities, and independent fortune, established to fix the attention of a great nation on the improvement of its soil, and to direct and assist in the ancient and most important of all arts, that of providing food for man.

The eyes of all Europe are already turned to this board, which, it is believed, is the first national establishment, on a great scale, that ever existed in any country in favour of agriculture, and the advantages of which now appear so obvious that it is a matter of astonishment that such an institution was not sooner erected.

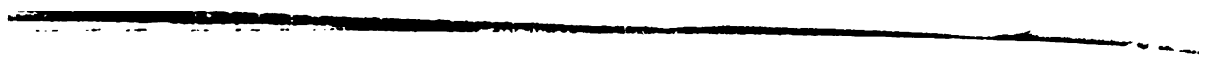
At the time of the landing of the Romans on this island, corn was raised only on the coasts, and even so late as the expedition of Severus, tillage was altogether unknown in those parts which lay between his wall and that of Antoninus. But, under the dominion of that wonderful people, it soon came to be considered as the granary of the Western Empire, and immense quantities of corn were annually exported for the use of the armies in Germany and in Gaul; and in the year 359, when there happened to be an extraordinary demand upon the continent, Julian ordered eight hundred ships to be

uilt larger than the common barks, and sent them to Britain for grain. It is not possible to ascertain the capacity of these vessels, but it is probable, from privileges that were granted to those who built ships above a certain size, that many of them would contain more than ten thousand Roman measures, or upwards of three hundred English quarters.

Considering the change of manners it is not to be expected that the days of ancient Rome will be revived, when the most distinguished citizens united the culture of the liberal arts with the tillage of their fields, and when the highest Officers of the State, having left the helm of government, did not disdain to lay hold of the stils of the plough. When, however, we contemplate the rapid progress which agriculture made in this island in the old days of that superstitious people, who were governed in their time of sowing by the age of the Moon, and the setting of the Pleiades, what may not be hoped for from the spirit of an enlightened nation fully excited and directed to its proper objects by the newly established Board, under whose auspices, were but the ravages of war to cease for a century, Great Britain would attain to an incredible degree of wealth and cultivation? Enjoying a soil of great original fertility, and a climate favourable to the growth of most branches of the vegetable kingdom, its craggy mountains and verdant hills could be clothed with lofty timber or bleat with innumerable flocks, its meadows would rear the stately bullock, and its fruitful plains would wave with the richest crops of every grain that the influence of a British sun can pour into the lap of plenty. The persevering hand of industry would even teach trees and plants to flourish that at present are sickly and droop, and can hardly withstand the severity of an inclement winter. In a few centuries more others might be cultivated with success, which, if directly transplanted to our climate, would immediately perish. When peaches were first introduced into Italy all the world was surprised that they could be brought to perfection out of Persia. What would Cæsar and Diodorus Siculus say, were they told that the most esteemed wines of Europe are produced in Gaul, Germany, and Hungary, where they imagined that vines would not grow? Or Strabo, if he knew that figs can be propagated in the north of Scotland? Or Lucullus, that cherries will grow almost any where, which in his time were known only in Cerasus, and the milder climates of Europe?

Trees and plants, being altogether passive, accommodate themselves very slowly to a change of climate ; but the idea has been already * thrown out, that even those of the torrid zone *may* be made to flourish in northern regions, *may* become gradually inured to the climate, that the climate itself *may* be changed for the better, and that some thousands of years hence, reposing under their own olive tree, future Britons *may* quaff their own wine, or sip their own tea sweetened with the juice of their own sugar cane.

* No apology is due to the author of J. W. Spencer's travels for the freedom that is here used with them.



PRELIMINARY OBSERVATIONS

BY

THE BISHOP OF LANDAFF.

EXTENT OF THE COUNTY.

THE county of Westmoreland was surveyed in 1768, and a map of it, upon a scale of an inch to a mile, was engraved by Thomas Jeffreys geographer to his Majesty, in 1770. It appears, from this map, that the greatest breadth of the county, from its southern boundary, near Burton, to its northern one, near Penrith in Cumberland, is thirty-two miles, and that its greatest length, from east to west, is forty miles.

I covered this map very exactly with fine writing paper, except the Estuary near Millthorpe and Windermere lake; I then cut out a slip of the paper of an inch in breadth, and of ten inches in length, and weighed it accurately; from another part of the same paper I cut another slip, two inches in breadth and five in length, and found it to be precisely of the same weight as the first slip; and hence, as the surfaces of the two slips were equal, we may collect that the paper was of an uniform thickness. The area of each of these slips was ten square inches, and consequently covered a space on the map equal to ten square miles; I then weighed the whole of the paper which

had covered the map, and by comparing the weight of the whole with the weight of what had covered ten square miles, I found the number of square miles in the whole to be 844; now there are 640 statute acres in a square mile, and consequently 540,160 acres in the whole county.

I measured this map in the ordinary way by resolving it into triangles, and found its area to be equal to 636 square miles, or 407,040 statute acres.

Templeman, in his survey of the globe, makes the area of the county of Westmoreland equal to 633 square miles, and consequently, according to him, it contains 405,120 acres. The medium of these three different estimates (though I am most disposed to rely on the first) is 450,772.

Professor *Zimmerman*, in his political survey of Europe, estimates England and Wales at 54,112 square miles, amounting to 34,631,680 statute acres. *Templeman*, in the work above-mentioned, says that England and Wales contain 49,450 square miles, or 31,648,000 statute acres; the mean of these two gives 33,139,840 statute acres for the whole surface of England and Wales, and hence the county of Westmoreland may, in superficial content be esteemed a seventy-third part of England and Wales.

Proportion between the Cultivated and Waste Lands in the County.

In 1689, when a bounty was first granted on the exportation of corn, one third part of the land in England and Wales, or about eleven millions of acres, was supposed to lie in uncultivated commons; if this was then a just proportion between the cultivated and waste parts of the kingdom, we may safely conclude, that much above one third part of Westmoreland was then waste land; as it is evident, from a bare view of the county, that few, if any counties in England have, in proportion to their whole extent, so much uncultivated land as this has. The many inclosures which have taken place, during the last hundred years, have lessened in some degree, the waste land of the whole kingdom; but no inclosures of much consequence have taken place in Westmoreland. Instead of one third, I am disposed to conjecture that three fourth parts of Westmoreland consist of uncultivated land: I will state my reasons for this conjecture, being as sensible as any person can be of the objections which may be made to it; but in a mat-

ter where there are no *data* to proceed upon, a conjectural argument may be allowed.

It appears, by the return made by the overseers of the poor to the House of Commons, that the sum raised by assessment in all the parishes and townships of the county, at a medium of three years, ending in 1785, amounted to L. 5,757. The town of Kendall, including Kirkland, is the only large town in the county, it is found, by an actual survey made this year, to contain 8089 inhabitants, having experienced an increase of 518 inhabitants since the year 1784; of the present number 143, or about one fifty-sixth part of the whole, are *paupers* living in the workhouse. The poor rates of this town amounted, according to the same return, to L. 1125 a-year; this sum being subducted from the annual amount of all the poor rates in the county, leaves L. 4632 for the sum raised from all the estates in the county, exclusive of Kendall. From particular inquiries in various parishes, I am of opinion, that the poor rates do not, in this county, exceed a shilling in the pound, in the actual rental of all the lands; but a shilling in the pound (supposing the sum annually raised to be L. 4632), will give a rental of L. 92,640. All the land in Westmoreland, which can either be ploughed or mown for hay, is worth at least a rent of a pound a statute acre on an average; and hence it may be inferred, that 100,000 acres of such land, or less than one-fourth part of the whole, would yield a rental equal to, if not exceeding, the rental of the county. The high inclosed rough pastures are let from one to five shillings an acre. But whether the uncultivated land in Westmoreland be equal to three fourths, or one half of the whole, it cannot be questioned, that there is so much of it, as to render its improvement a matter not only of individual concern, but of national importance.

Improvement of Waste Lands.

THE uncultivated lands in Westmoreland are of various sorts, with respect to soil and situation, and capable of different sorts of improvement. Some of them consist of extensive commons in low situations, and are of an excellent soil; these might be improved by inclosures, without any risk of loss by the undertaking. Others constitute extensive mountainous districts, called by the natives *fells* and *moors*; the soil of these is, generally speaking, an

hazel mould. In its natural state, it produces little else than a coarse benty grass, heath, and fern; or, in the language of the country, ling and bracken. Many of these fells are, in their present state, of so little value, that the liberty of keeping ten sheep on them may be hired for sixpence a-year. Supposing six acres to be sufficient for the maintenance of ten sheep, the rent of such land is a penny an acre; and the price of the fee simple of it, at twenty-four years purchase, two shillings. Whilst there is an acre of such waste, improveable land in Great Britain, it may be hoped that, when the legislature shall turn its attention to the subject, no inhabitant of the island will be driven, by distress, to seek a subsistence in Africa or America.

Above forty years ago an experiment was tried in Spain, with respect to the cultivation of waste lands. Several thousands of poor and vagabond people were settled on them at the expence of the government. If this experiment has succeeded (which may be easily known,) so far, as that the land has been made productive, that the settlers have been increased, and that the government has been reimbursed the whole or a principal part of its expence, it may induce other governments to adopt the same or a similar plan. The giving a cottage, and a few acres of land, under a small reserved rent, and perhaps under other useful restrictions, to a poor man, is certainly a good way of improving the land. When a man has lands of his own, he and his family will exert, in its cultivation, a quantity of labour which would not otherwise be brought into existence. The value of this, otherwise non-existing labour is, in one respect, nothing; it ought not to be reckoned as a part of the expence attending the improvement of the land; and, on that account, many thousands of acres of land might be brought into cultivation, which would not, in any other way, pay the expence of improvement. The manner of improving moor-land, by paring, burning, ling, &c. is well understood by some few individuals, and the advantage resulting from it ascertained, by what has been recently practised in some parts of the county on private estates.

There are many barren mountains in this county which do not admit improvement by paring and burning, and which are incapable of being probably converted either into arable or good pasture land: Yet the highest and most craggy parts, two acres of which do not afford sustenance for six months in the year to one sheep, might, with a great prospect of success, be

planted with larches ; I say with a great prospect of success, for I do not speak with certainty, not knowing whether there are in Great Britain any plantations of larch made on such exposed and rocky situations as are here spoken of : But, on the other hand, it is known, that the larch grows in Italy on higher mountains than any that we have in this island ; and not only that it grows in Italy, where the climate is less severe than in Great Britain, but that it grows in the north of Russia, where it is much more severe ; for at Archangel, in the latitude of 64°, ships are built of larch growing in that climate.

It may be of use to state the probable profit which would attend planting the land in question with larch. A thousand acres of this sort of land might be inclosed with a circular wall six feet in height, (where the stones can be easily gotten, as they may in most parts), after the rate of six shillings an acre, or L. 300 for the whole ; five hundred larches, two feet in height, (so as to enable them to resist the long grass,) might be planted on each acre for fourteen shillings ; hence a plantation of 500,000 larches might be made for L. 1000. Now L. 1000 improved at compound interest, at the rate of L. 4 per cent. would, in sixty years, amount to the sum of L. 10,519 ; this is the accumulated loss attending the inclosing and planting 1000 acres of rocky land in sixty years. The rent of 1000 acres, at one penny an acre, is L. 4 : 3 : 4, a year ; in eight years the larches would be out of all danger from sheep, so that the loss of rent ought only to be estimated for eight years ; but L. 4 : 3 : 4, a year, though improved after the same rate of compound interest, would not amount to L. 40 in eight years ; say, however, that it would amount to L. 81, which is allowing more than two pence an acre for the annual rent of the land, then would the whole expence attending the plantation in sixty years be L. 10,600. I have here supposed sheep to be shut out of the plantation for eight years ; if it should be found, that sheep will not crop the larch, and from more than one observation, I have reason to believe they will not, they need not be shut out at all ; nor, on districts, where nothing but sheep are depastured, need any fence be made. I know the advocates for close planting, instead of 500, would require 5000 larches for each acre ; I am not convinced of the utility of such close planting, except where it is intended to nurse up oaks, or other kinds of wood ; but if that mode should be adopted, the thinnings, after twenty years growth, would pay the expence of it.

At the expiration of sixty years, suppose that only 250 larches remained on each acre, or that one half had perished; the probable value of them may be thus estimated. From a great many experiments made by myself and collected from others, I find the annual increase in circumference of the arch, at six feet from the ground, to be one inch and one half on an average of several years; and this inference has been drawn from the actual admeasurement of larches in different parts of England and Scotland, and of different ages, from ten years old to fifty. On this supposition, the larches would measure, one with another, ninety inches in circumference, at six feet from the ground. A larch which measures ninety inches, at six feet from the ground, would measure above seventy at twenty feet from the ground; but supposing seventy inches to be the circumference at twenty feet, and the length of the tree to be forty feet, neglecting the remaining top; then will its solid content be eighty-five cubic feet, and the value of the tree at nine pence a foot, above three guineas. But as the trees are supposed to be planted in an high, bleak, barren situation, their annual increase may not be so great as is here supposed; instead of being worth, at sixty years after planting, three guineas a-piece, admit that they are worth only ten shillings each, then would the whole plantation be worth L. 125,000, and deducting the whole expence, L. 10,600, as before estimated, there would remain a profit of L. 114,400. The present value of L. 114,400 to be received sixty years hence, is above L. 10,000 (interest of money at L. 4 *per cent.*) Ten thousand pounds at L. 4 *per cent.* purchases an income of L. 400 a-year: by planting then, a barren estate, of a thousand acres, is improved from L. 4 : 3 : 4, to L. 400 a-year, reckoning the value of a reversion as a present certainty. Sixty years is a great part of the life of a man; but it ought to be considered as nothing in the existence of a nation, or even of a family, which is a little nation. The waste lands in this and other counties are a public treasure in the hands of private persons; all of them ought to be converted into arable, meadow, or pasture land, which are capable of admitting, with profit, that kind of improvement: And such of them as will not pay for that mode of improvement, ought to be covered with wood; the high parts, and especially the sheltered dells in the high parts, with larch, and the lower with oak, ash, &c. When a spirit of agricultural improvement is fully excited, the individuals to whom such uncultivated

lands belong will be prompted, by an attention to their own interest, to forward every judicious plan which may be proposed for rendering them more useful to the proprietors and to the community; their present application to the summer-maintenance of a few miserable sheep ought not to be persevered in, if any other use can be made of them.

COPPICES.

IN some parts of Westmoreland considerable portions of land are covered with coppices, consisting principally of oak, ash, alder, birch, and hazel. These underwoods are usually cut down every sixteenth year: The uses to which they are applied are chiefly two—hoops and charcoal. The hoops are sold in the wood at L. 5 a thousand; they are generally manufactured in the country, and sent by sea to Liverpool; the charcoal is sent to the iron furnaces in the neighbourhood. The value of a statute acre of coppice-wood, of sixteen years growth, is variable from L. 10 to L. 15; and if it consists altogether of oak, its price may amount to twenty guineas; L. 6 for the charcoal, and L. 15 for the bark; it being the custom here to peel the bolls, and all the branches of the oak, which are equal to the thickness of a man's thumb.

It is an extraordinary thing to see any trees left to stand for timber in these underwoods, the high price of bark is a temptation to cut the whole down. Fine saplings, from nine to twelve inches in circumference, at five feet from the ground, and with bark as splendid as polished silver, are felled by the unfeeling proprietor with as little regret as if they were thorns or briars. Of late, indeed, some few owners of underwoods have left standards, and if they consult their interest, the practice will become general. As this is a point denied by many proprietors of coppices, it may be of use to explain the principles on which the observation is founded.

Suppose a statute acre of underwood to be, in the spring of 1794, sixteen years old, and that the whole is then cut down and sold for L. 14. This sum will, in sixty-four years, (reckoning compound interest at 4 per cent.) amount to L. 172. In 1810 another fall of underwood, of the same value, will be made; the L. 14 then arising, improved for forty-eight years, in the same way, will produce L. 91. In 1826 another L. 14 will arise from an-

other fall of the underwood, this sum, improved for thirty-two years, will amount to L. 49. In 1842, another fall will produce L. 14, which, in sixteen years, will become L. 26. And, lastly, in 1858, or in sixty-four years from 1794, another fall will produce L. 14. The amount of the value of the five falls, thus estimated and improved, will be L. 352. Let us now calculate the profit which would result, in the same time, from the same acre of underwood, if it was managed in a different way. Instead of cutting the whole down in 1794, let us suppose that 150 of the best young oaks are left to stand for timber; the then value of these, at 2d. a tree is 25s. this being subducted from L. 14, the value of the whole coppice, leaves L. 12:15:0. This sum, improved as before, will amount, in sixty-four years, to L. 156 (shillings and pence in these calculations being neglected). The next fall in 1810 ought not to be valued at more than L. 10, as 150 trees, then of thirty-two years growth, will do some injury to the underwood; L. 10 in forty-eight years will amount to L. 65. The next fall in 1826 may be valued at L. 8, and at that time seventy-five trees should be taken down; these trees will then be forty-eight years old and worth 15s. a tree, or L. 56 in the whole, this added to L. 8 the value of the then underwood, makes L. 64, which, in thirty-two years, will produce L. 224. Without estimating the underwood in 1842, and in 1858, at any thing, or the value of the pasturage for thirty-two years, at any thing, let us suppose the seventy-five remaining trees to be cut down in 1858, being then eighty years old, and that they would, one with another, be worth L. 4 a-piece, or L. 300 in the whole: The sum of the profits, thus arising, is L. 745, or more than double the other amount.

It is a general opinion in this, and, I believe, in other countries, that it is more profitable to fell oak wood at fifty or sixty years growth, than to let it stand for navy-timber to 80 or 100. According to the price which is now paid for that commodity, either by the Navy-Board or the East-India Company, I believe the opinion to be founded in truth. The following observations contain the reason for this belief.

If profit is considered, every tree of every kind ought to be cut down and sold, when the annual increase in value of the tree, by its growth, is less than the annual interest of the money it would sell for:—this being ad-

mitted, we have only to inquire into the annual increase in the value of oaks of different ages.

In the Philosophical Transactions, for 1759, there are some useful tables respecting the growth of trees, by Mr. Marsham; from these tables the two following inferences may be drawn.

1. That it is highly profitable to let young thriving oaks, which are not worth above 30s. a tree, continue standing.

2. That it is not profitable to let oaks of 80 or 100 years growth, continue standing.

Three oaks, marked in the tables, No. 8.—11.—12, in April 1743, before they began to shoot, contained eleven and one half feet of wood, and were altogether worth, at eighteen pence a foot, bark included, 17 s. and 3 d. The same trees, sixteen years afterwards, contained thirty-four and one half feet, and were worth L. 2 : 11 : 9. Now, if 17 s. and 3 d. had been improved at the rate of 7 *per cent.* at compound interest for sixteen years, it would not have amounted to L. 2 : 11 : 9; and of consequence the proprietor, by letting such oaks stand, improves his property in as high a degree, as if he put out his money to interest at near seven and a half *per cent.*

Three oaks, No. 2.—3.—5. in 1743, contained 100½ feet of timber, and were worth L. 7 : 10 : 9. The same trees, sixteen years afterwards, contained 132½ feet, and were worth L. 9 : 18 : 6. Now, L. 7 : 10 : 9, the value of the trees in 1743, improved, at the low rate of interest, of L. 2 *per cent.* would, in sixteen years, amount to a sum exceeding L. 9 : 18 : 6. The proprietor then, by letting such trees stand, does not improve his property at the rate of L. 2. *per cent.*

The oak, No. 1. in the third table, was worth L. 1 : 2 : 6 in 1757, it gained in one year one foot, or 1s. 6d. in value; if it had been worth 30s. and had gained one foot, there would have been no profit in letting it stand, as the interest of 30 s. at 5 *per cent.* would have produced 1 s. 6 d. in the year; and it is for this reason that I have fixed upon 30 s. as the value of trees which should be cut down; if they are cut sooner or later, the proprietor will be a loser. It must not be supposed, however, that great precision can attend this observation; since particular soils, or the greater or less thriving condition of the wood, may render it useful to cut down trees be-

fore they are worth 30 s. or to let them stand a while longer. It ought to be remarked also, that large trees sell for more per foot than small ones do, yet the usual increase of price is not a compensation to the proprietor for letting his timber stand to a great age. This may be made out from the following experiment.

On the 27th October 1792, I measured, at six feet from the ground, the circumference of a very fine oak of eighty-two years growth from the time of its being planted, and found it to be 107 inches; on the same day of the month, in 1793, it measured 108 inches. There is not one oak in fifty (at the age of this) which gains an inch in circumference in one year. The length of the boll of this tree was about eighteen feet, it contained about eighty-four feet of timber, and was worth, at 3s. a foot, L. 12: 12. It gained in one year very little more than a foot and one half of timber, or 4s. 6d in value; but the interest of L. 12: 12 at L. 4. *per cent.* amounts, in one year, to above twice the value of the increase, even of this tree, which is a singularly thriving one:

I have been the more particular on this subject from a public consideration. Many men are alarmed lest our posterity should experience a scarcity of oak timber for the use of the navy; and various means of increasing its quantity have been recommended with great judgment. In addition to these means, the making a much greater than the ordinary increase of price on timber of a large scantling, might be not improperly submitted to the consideration of those who are concerned in the business. If the Navy-board would give L. 8 or L. 9 a-load for timber trees containing 100 cubic feet & upwards, instead of L. 4 or L. 5, every man in the kingdom would have a reasonable motive for letting his timber stand till it became of a size fit for the use of the navy; whereas, according to the present price, it is every man's interest to cut it down sooner.

In the neighbourhood of Ambleside there is found a stratum of gray limestone, which, though it contains a little clay, might be as serviceable as the purest sort for agricultural purposes; but, unfortunately for the improvement of this part of the county, coal is so dear, that very little of this limestone is burned. The lime which is used in the culture of the lands being either fetched from Kendall, or brought up Windermere lake at

- a great expence. As there is great plenty of coppice wood in the district here spoken of, it may be useful for the farmers and land-owners to consider, whether the burning of lime with fagots in a flame-kiln, as is practised in Suffex, may not be a more beneficial application of the underwoods than the converting them into charcoal. Even the spray-wood, here called chat, which is too small to be made into charcoal, and which is now sold for sixpence a cart, or more generally left on the ground, might be made into fagots, and mixed with wood of a larger size, so that no part of the coppice would be lost. In Suffex they use 600 fagots, cut in the winter, and weighing, when dry in the spring, thirty-six pounds each, for the burning of 480 Winchester bushels of lime.

1944

1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the problem and the objectives of the study. It also mentions the scope of the study and the methods used.

2. The second part of the report is a detailed description of the experimental work. It includes a description of the apparatus used, the procedure followed, and the results obtained. It also discusses the errors and limitations of the experiment.

3. The third part of the report is a discussion of the results. It compares the results with the theoretical predictions and with the results of other experiments. It also discusses the implications of the results and the conclusions drawn from the study.

4. The fourth part of the report is a summary of the work. It briefly reviews the main points of the report and states the conclusions.

PRESENT STATE OF THE COUNTY.

*Boundaries, &c.*For Remarks and additional
Observations.

WESTMORELAND is an inland county, bounded on the north by the bishopric of Durham and Cumberland, on the west by Cumberland and Lancashire, on the south by Lancashire and Yorkshire, and by Yorkshire and Durham on the east. Its extent has been already specified in the bishop of Landaff's Preliminary Observations. The country in general is so mountainous and hilly that a great proportion of it must ever remain untouched by the plough, and it is conjectured that three fourth parts of it are at this day waste and uncultivated. Between these mountains there are several very pleasant and fertile vallies that want only trees and hedge-rows to be truly beautiful. In these vallies the soil is of various sorts, but always dry, upon a bottom of sand, gravel, or limestone rock. That upon limestone is uniformly esteemed the best. The whole cultivated land of the county is divided by thorn hedges, or stone walls, into inclosures, many of which do not contain half an acre; there are a few of eight or ten acres, and in general they may contain from three to five acres.

Rivers. Of the numerous streams that rush from the mountains and water the vallies beneath, there are only three that preserve their names to the ocean. The Eden which springs in Mallerstang, and having received in its course the Eamont and the Lowther, and many little rivulets, enters Cumberland, and running the whole length of that county, empties itself into the Solway Frith below Carlisle. The Kent rises in Kentmere, washes the vale of Kendall, and loses itself in the Estuary near Milthrope, the only seaport in the county. The third is the Lon or Lune, which has its source in Ravenstonedale, flows through the vale to which it gives its name till it enters the county of Lancaster, below Kirkby Lonsdale.

F.

For Remarks and additional
Observations.

Climate. The climate of this county, as may be expected from its vicinity to the western ocean, over which the south-west winds blow for eight months of the year and bring the exhalations to descend in rain on the mountains, is remarkably moist. The quantity of rain that falls in the west part in a year has been ascertained by rain-gages kept at Kendall, and on the banks of Windermere. In the wet year 1792 it amounted to eighty-three inches. In ordinary years it amounts to forty-five or fifty inches, the lowest of which is twenty inches above the medium quantity that falls in Europe. The air, however, is pure and healthful, the winters rather long and severe. In the winter 1791—92 thirty-six pounds were paid for cutting only a horse-track through the snow upon less than ten miles of the road from Shap to Kendall.

I. LANDS IN TILLAGE.

A large proportion of the county of Westmoreland is possessed by a yeomanry who occupy small estates of their own from ten to fifty pounds a-year, either freehold or held of the lord of the manor by *customary tenure*, which differs but little, if at all, from that by *copyhold*, or *copy of court roll*. Farms in general are so small that it is rare to meet with one of L. 100 a-year of rent, though there are some even of L. 200 or L. 250. The mode of farming is very near the same throughout the county; and the course of crops is often pointed out to the farmer in his lease, which is generally for seven or nine years, sometimes only for five or three years, at others for fourteen, and in a few instances for twenty-one years. Some principal land-owners grant no leases.

Course of Crops. When a field of grass is overgrown with moss, which commonly happens in seven or ten years, it is broken up with the plough in the beginning of March, and sown about the first of April with oats, at the rate of seven and one-half Winchester bushels upon the customary acre of 6,760 square yards. The crop is reaped about the middle of September, and sixty bushels are reckoned a tolerably good return.

Second Crop. The land is ploughed for the second crop as soon after Candlemas as the weather will permit, and eighty or a hundred cart-loads of stable-yard dung are laid upon the acre. It is ploughed again in April, and sown with four bushels of barley or bigg. The harvest is earlier than that of the oats, and fifty-four bushels are reckoned a good crop. Some farmers plough three times for barley, but it is the general practice that is here described.

Third Crop. After the barley the land is ploughed in April, and eight bushels of oats per acre are immediately sown upon it. The harvest is commonly in September, and the crop is usually as good as the first was.

This is the most ordinary succession of crops though it is sometimes broken through by taking two crops of oats before the barley, which, in that case, is followed by another of oats. The land is then left to itself, and the first year it produces a light crop of hay of bad quality. In the third year the crop is at the best with regard to both quantity and quality. In seven or in ten years it is again mowed over, and is again ploughed up to undergo a similar treatment.

Exceptions.—1st. To this general mode of management there are several exceptions which perhaps it would be improper to omit. From Kirkby Steven to Brough and Appleby, and from that town to Temple Sowerby, the soil is a deep sand, which, by cultivation, becomes more compact and more retentive of moisture. The fields of grass mow over sooner or later according to the quality of the soil; some, where the soil is thinnest, and the subjacent stratum the poorest, it is judged necessary to break up after an interval of only four or six years. In this part of the county there are particular farms where after the second crop which is oats generally inferior to the first, the land is summer-fallowed, planted with potatoes, or sown with turnip, which last are given to the wintering stock of cattle and sheep. Dung is always laid upon the fields designed for turnips and potatoes, and the remainder upon the fallow, which is likewise invariably and always successfully limed at the rate of seventy-five Winchester bushels per acre. What is so fallowed is sown in the middle of September with

**In Remarks and additional
Observations.**

two and one-half bushels of rye per acre. The crop is reaped before a year goes round, and thirty bushels are reckoned a good return. In the month of May grafs-seeds are sown amongst the rye, but are never covered either by the harrow or the roller. Those fields which were turnips and potatoes are sown with barley or oats, and grafs-seeds, in the following quantities to an acre : eight pounds narrow-leaved red clover seed, which is preferred to the common broad-leaved clover because it remains longer in the ground, four pounds white clover, four pounds hop clover, four pounds of rib grafs, and from five to ten bushels of hay seeds shaken from the crop of the former year. These consist chiefly of *Bent* grafs, which seems to be a species of rye-grafs, of the great *Poa*, or oat grafs, and *Dark* grafs, or Flanders hay seeds. The first year, whether it be hayed or pastured, the crop is far more valuable than that of any natural grafs in the neighbourhood upon soil of an equal quality ; and the cattle, especially the horses, uniformly prefer these artificial grasses to those which the land produces of its own accord.

Exception 2d. In the immediate neighbourhood of Kendall, where the soil is gravelly or sandy, it is not unusual to take potatoes for the second crop, and barley for the third ; the land is then sometimes left to itself, but for the most part the barley is followed by a crop of oats. A great many potatoes are grown and consumed in the county. The price, at the time of taking them up, is commonly 1s. 4d. per Winchester bushel ; in the winter and spring it often rises to 2s. The produce is variable from 250 to 350 Winchester bushels per statute acre. They are cultivated in various ways, but chiefly by the plough. The inhabitants think that potatoes from fresh ground are of the best quality, but the product is usually the greatest from an oat stubble. Sometimes the farmer grows the potatoes at his own risk ; at others he manures the land with 100 cart-loads of dung per customary acre, ploughs it once, and lets it in this state at 2s. the perch to the manufacturers and labourers of Kendall, who furnish the plants and the rest of the labour. The price they pay is high, but reckoning little for the work they bestow upon it, which is conducive to their health, they

are often well satisfied with their crop which is sometimes very great, the land being well adapted for the cultivation of this root.

Exception 3d. From Millthroe to Burton, and from Burton by Farlton to Kirkby Lonsdale, both the farms and inclosures appear to be somewhat larger than in most other parts of the county, and it is not quite so rare to see a few acres of wheat. The land designed for this crop is summer-fallowed after the first or second year from the ley, and is well manured with dung or lime, or with both. It is sown in September with wheat soaked in brine, or washed with chamberlye, and dried with lime, at the rate of four bushels per customary acre. Forty-five bushels are reckoned a good crop; and the harvest may be ten days earlier than it is in the northern parts of the county. If the land is again manured, it is sown with barley after the wheat; if not manured, it is sown with oats.

II. GRASS GROUNDS.

Hay. Every occupier of land, whether *statesman* or *farmer*, having it in his power to keep any number of cattle, through the months of summer, upon *joisted* fields where they may be kept at a cheap rate, or upon commons where they may be kept almost for nothing, it is a principal object with him to provide for them plenty of winter food. Hence his attention is chiefly directed to his crop of hay. It has been already stated, that the quantity of land, at present under culture, does not exceed one fourth part of the whole county, or 135,000 acres. Had all the arable land in the county been cropped with corn three years out of twelve, there would have been precisely one fourth part of the whole in tillage; but there are many pastures of an inferior sort which are very seldom ploughed, and in the high parts there is a much smaller proportion of the land in corn than there is in the low parts. In the very extensive manor of Ravenstonedale, although there are between 2000 and 3000 acres inclosed, there are not sixty acres of corn; and it is probable that there are not in the county;

**For Remarks and additional
Observations.**

more than 20,000 acres under crops of corn in one year. The remaining 115,000 acres are cut for hay, or depastured with fattening beasts and rising stock, or with cows applied to the purposes of the dairy. From such an inspection of the county as was had with a view to the framing of this Report, the proportions used for these different purposes cannot be even guessed at; but that for hay is perhaps the most considerable. A prejudice against the artificial grasses prevails so generally over all the county, that it may be almost literally said they are never sown. When the land has produced a few crops of corn, and it is judged that the moss is quite destroyed, it is left to itself; and such is the humidity of the climate, and so strong is the vegetation of weeds and natural grasses, that the very first crop has, by actual experiment, been found to produce 120 stones of hay per acre weighed from the field. As every person who expects to have occasion for hay hires a field to supply him with that commodity, it is not often that hay is sold in large quantities; and it is still seldomer that the quantity raised upon an acre is exactly ascertained. When sold, it may bring from 4d. to 6d. a-stone in winter and spring, or from 4s. to 5s. a cubic yard. A cubic yard in the lower part of a well-pressed mow may contain twelve stones of hay, and has been known to sell as high as 7s. or 8s. In the southern and in the eastern parts of the county much attention is paid to the making of compost dung-hills, which, with the dung that remains after manuring for the barley crop, are always laid upon the hay grounds, and are thought considerably to retard the progress of the moss. At Kendall and other places where dung can be purchased they are manured after the first crop, and every third year while they continue in grass.

Fattening Cattle. The young cattle are kept on the lands of inferior quality in summer, and have straw and a little hay given them in winter. When three years old, if barren, they are either fattened in the pastures, or sold to the graziers of Yorkshire and Lancashire from L. 5. to L. 8. a-piece; if with calf, from L. 7, 10s. to L. 10.

Ten thousand Scotch cattle are annually sold at Brough-hill fair in the end of September. Though numbers of

these are carried off by drovers to the south of England, and many are bought by graziers from other counties, great quantities remain in Westmoreland. They are wintered on the coarse pastures, and in the straw-yard; in May following the young ones are sent to the commons, and those of an age proper for feeding are put upon the best grounds, and are ready for the shambles in October.

Heifers are *joisted* upon tolerably good pasture from 10th May to Michaelmas, at from L. 1, 1s. to L. 1, 7s. a-head. Horses are grazed among fattening cattle for 3s. 6d. a-week. Young horses are kept from Michaelmas to 5th March on the inferior kinds of land, and have straw given them in bad weather for 2s. a-week.

Fattening Sheep. Almost all the sheep in the county, except the wedders after the first year, are brought from the mountains on the approach of winter, and kept in the inclosed grounds till the month of April. Some graziers stock part of their pastures with wedders, or with ewes and lambs. The mutton and lamb which remain after supplying the consumption at home are sent to Lancaster and Liverpool.

Dairy. There are few counties in England, in which there is no great manufacturing town, where more milch cows are kept in proportion to its size, and where the produce of the dairy forms a greater part of the profits of the farmer. It may be naturally supposed that he is particular in the choice of his cows, and that they are remarkable for giving a great quantity of milk. Neither supposition, however, is founded in truth. The farmer keeps just such cows as he has bred, and they by no means yield so much milk as would be expected from those of the Dutch, or even the Scotch breed, § upon a pasture of the same quality. Farmers in the country generally estimate the expence of keeping a milch cow at five pounds a-year, and the produce at eight pounds. Cows

§ The Ayrshire breed is reckoned the best for milch cows in Scotland, particularly in the neighbourhood of Dunlop. The comparative value of all the different breeds, in regard to quantity of milk, &c. the Board of Agriculture proposes to ascertain.

**In Remarks and additional
Observations.**

in the country are kept for the sake of making butter, of which great quantities, of an excellent quality, are sent yearly to the London market in firkins of 56 lbs net, at from 30s. to 35s. each. In the immediate neighbourhood of Kendall the dairy turns out to better account by selling the new milk, which is contracted for all the year at 1½d a quart, being the same price which the London cow-keepers receive. The skimmed milk is sold at one third part of that rate. The ordinary price of a good milch cow may be about ten pounds.

General Economy. Farms in Westmoreland are not all employed for these different purposes in the same proportion: nor is the same proportion observed at all times upon any one farm. The general economy of a hundred acres at a rent of as many pounds may perhaps not differ very widely from the following statement: fifteen acres under crops of barley and oats, thirty-five acres in hay, and the remaining fifty acres in pasture. Ten dairy cows kept on the best of this pasture will probably yield twenty firkins of butter.

III. SHEEP FARMING.

The breed of sheep kept on the mountains and commons of Westmoreland is either native or a cross with Scotch rams. No attempt has yet been made to improve either the carcase or the fleece. They are horned, dark or gray-faced, thick pelleted, with coarse, strong, hairy wool. The whole flock upon a farm is herded together, which is different from the practice in those counties where sheep-farming is thought to be the best understood.

Wintering. Those store-masters who have not upon their own farms pastures sufficient for the wintering of their young sheep send them to the low grounds from the 1st November to 6th April, and pay 2s. a-head for those that return. They are so subject to the *Black-water* (*Sickness*, or *Middling-ill*) that, at an average, ten out of an hundred die before Christmas. After that, being very hardy, they seldom die, and never of that disease.

Price. The wedders are sold in October, when four years and a half old, from 9s. to 13s. each; the barren ewes at Lammas, from 8s. to 10s; and the old ewes about 6s. to be wintered in the inclosed grounds, and fattened with their lambs the ensuing summer.

Salving. In October, or the beginning of November, the whole flock is salved so heavily, that a gallon of tar and 16lbs. of butter are expended upon thirty-five sheep. A man may be hired for this work at 1 s. 8 d. a-day, in which time he will not salve above ten or a dozen; or he will undertake to salve them at 2 d. a-head. The whole expence is about sixpence a-piece. It has been repeatedly tried to substitute tobacco-liquor for the butter and tar, but it is generally imagined that the wool is better for the sheep having been salved. Near Kirby Stephen this operation is performed with oil and tallow, at an expence of 4 d. a-head.

Wool. The wool is worth, on an average of years in time of peace, 5 d. a pound. Part of it is sold to the manufacturers of Kendal, and part of it to those at Bradford, and other places in Yorkshire. The ewes are said to bear the best wool; and on an average of a flock six fleeces weigh a stone.

Silverdale Breed. Silverdale, a small district in the neighbourhood of Millthorpe, gives its name to the breed of sheep in this part of the county. The soil is good and on a limestone stratum, and a branch of the sea is nearly contiguous to it. They are horned, white-faced, and close-woolled. They are said to be native, and are much superior to the common sort in regard both to fleece and carcase. At the sale of a farmer's stock, in October 1793, the lambs of this breed brought 10 s. 7 d. a-piece, the dinmonds 17 s. 1 d, and the ewes at the age, of three years and a half 17 s. 6 d. or 17 s. 8 d. In the townships of Burton and Holme, where this breed is kept, five sheep at an average yield a stone of wool, which is worth 8 d. a-pound. At a medium of the whole parish of Burton for eight years, from 1772 to 1779 inclusive, it required six fleeces to weigh a stone.

It is not unusual for the proprietor to be owner of the sheep upon the farm. In this case, the farmer is to be considered as little better than a shepherd. The flock is

For Remarks and additional
Observations.

valued at the time of his entry, and again at his removal, and the difference between these valuations is settled in money.

Experiments.—1st. Twenty Lincolnshire *Mugg* ewes that had been tupped by a ram of Mr. Bakewell's breed were brought into Westmoreland in the month of December 1789, and lambed in February 1790. These *Mugg* ewes were tupped in 1790 by common Westmoreland ram, and the dinmonds produced by this cross have turned out the best sheep in the county, and weigh from 18 lbs. to 20 lbs. a-quarter, and are thought to be superior to those of the first breed.

2^d. Six of the lambs produced from the tup of Mr. Bakewell's breed and the *Mugg* ewes, were rams. Four of these rams were put to ewes of the common breed in the county, and the lambs sprung from this cross are much of the same size as the ordinary breed; but they are broader on the back, and finer in the wool. As the experiment has not yet been long tried, it must be left to time to show what the result will be.

3^d. The lambs produced by the Lincolnshire ewes, and their own lambs of February 1790, are not so strong as these lambs of 1790, which the shepherd is disposed to attribute to a scarcity of food in the spring rather than to any defect in the breed.

4th. Thirty of this breed were left unsalved in 1791; they were in good condition and had no scab. These same were again left unsalved in 1792, and broke out in scab early in 1793. It must be remarked that the sheep at the time of salving in 1792 were not in such condition as in 1791; so that it does not appear, from this experiment, that there is any necessity for salving sheep in good condition.

5th. The Lincolnshire ewes do not carry so much wool, nor is it of such a good quality, as when they were brought into the county.

IV. COMMONS.

Sheep. The commons in Westmoreland are numerous, extensive, and valuable. They are depastured chiefly

For Remarks and additional
Observations.

with flocks of sheep, which are managed in a way differing but little from that followed by the store-masters in the county. In winter all the sheep are brought down to the inclosed fields, except the wedders, which, being thought able to endure the severity of any storm or fall of snow, are left to shift for themselves upon the commons, where they remain till they are four years and a half old, when they are sold from 9 s. to 13 s. a-head. Having dropped their lambs, the ewes, in the end of April, are sent back to the commons, where the whole flock pastures indiscriminately without an attendant. The lambs are sometimes suffered to wean themselves; at others, the teats of the ewe are fastened up to her udder by a plaister of coarse paper and pitch. The value of the wool, and the expence of salving, are the same with those already mentioned.

Scotch Sheep. Great numbers of Scotch hogs and diamonds are annually bought at Stagshawbank fair in the month of June, and grazed on the commons of this county. On some they are found to answer very badly; on others they thrive well, and are ready for the grazier a year earlier than those of the native breed. There is here a strong prejudice in favour of these coarse-woolled sheep, which there is every reason to believe is ill founded. The sort now known under the name of the *Cheviot* breed being equally hardy, and much more profitable from the superior value of their fleece.

Black Cattle. In addition to all these sheep, numerous herds of black cattle are likewise to be seen upon the commons. A few of these are of the breed of the county, and the rest are Scotch, either bought at Brough-hill fair in the end of September and wintered on the low grounds and in the straw-yard, or purchased in the spring from drovers who fetch them from Galloway and Dumbarton. In autumn, they are either sold to the south-country drovers, or wintered and fattened in the county.

Ponies. A few ponies of the Scotch breed are reared upon the commons; but the practice not being general, it need not be dilated upon.

Geese. Great numbers of geese are bred upon the

**For Remarks and additional
Observations.**

commons, and sold to the Yorkshire drovers about 1 s. 4 d. a-head.

It is generally understood that no person shall send to graze on any common more stock than he can winter upon his estate or farm, in right of which he has a title to pasturage on that common. This regulation, however, is little attended to, and the commons are almost always overstocked to such a degree that many persons do not think it worth while to avail themselves of their right of commonage.

On stinted pastures, it is very ordinary to hire out the right of keeping both cattle and sheep. A summer's grafs for an ox, or for ten sheep, on Forest Hall and Mosely common, is let at 4 s. ; on a part of Troutbeck common, where no sheep are allowed to feed, an ox may be kept for 3 s. 6 d, and on another part of the same common, *an ox or ten sheep may remain all the year for sixpence.*

V. RENT.

The rent of the land varies with its situation and fertility. In all situations, and of all qualities, it has encreased greatly in its value within these few years. This may be owing partly to the advance in the price of its productions, and partly to improvements in the art of farming. At Shap, Ambleside, and in Troutbeck, the best hay meadows are let about 50s. the customary acre. Near towns the rent of the best fields to be mowed may be, at a medium, rather above L. 3 per acre. At Kirkby Stephen and Appleby they are not quite so valuable. Near Kendall, Burton, and Millthrope, some fields are let at L. 4 ; and at Kirkby Lonsdale there are a few which fetch above L. 5. Lands of inferior kinds may be hired for pasture at all varieties of price. In Ravenstonedale, where no tithes are paid, and where the land derives no part of its value from its situation, there are between 2000 and 3000 acres inclosed ; four fifths of these are let from 4s. to 11s. the statute-acre, and the remaining fifth from 20s. to 40s.

In the bottom of Westmoreland a farm of an hundred acres of inclosed land may be hired upon lease for L. 150.

A farm containing much coarse pasture-land may be had for 20s. or 24s. per acre. It is not always known whether these coarse pastures have been measured, they being sometimes estimated by the number of cattle they can maintain.

Besides the rent the farmer is subjected to the payment of tithes, poor's rates, and road money.

VI. MANURE.

Dung. To encrease the quantity of his manure, and to apply it to the greatest advantage, are by no means the least important of the various branches of the farmer's avocation. In those parts of Westmoreland where summer-fallowing is not practised, the land designed for barley and potatoes always receives the stable-yard dung at the rate of 60, 80, or 100 single-horse cart-loads an acre; and in autumn what remains is laid upon the hay-grounds, at a rate per acre considerably less.

On some few farms in the neighbourhood of Appleby, where summer-fallow and crops of turnips may almost be said to enter into the general course, the dung is carried in winter from the yard to the fields, and laid down in a heap which is turned over two or three times, with a view to accelerate putrefaction. Twenty cart-loads per acre are laid upon the turnip land and the fallow, and its operation is always assisted by the addition of seventy-five Winchester bushels of lime. Dung is sold at Kendall and at Millthorpe, for 1s. a cart-load.

Lime. In most parts of Westmoreland limestone is found in inexhaustible plenty, but coals to burn it must be carried from such a distance, that its application to the purposes of agriculture has not yet become general. When, by the projected canal to Kendall, coals shall be brought into the heart of the county, its use must soon become universal.

It is sometimes laid upon the land when it is in tillage, but for the most part it is spread upon the surface of grass fields; and it has been found to sweeten such as are coarse and benty amazingly.

For Remarks and additional
Observations.

In whatever way it is applied, and in whatever quantity, varying from 75 to 480 bushels an acre, it is always attended with wonderful effect. The price at the kilns is 3 d. or 4 d. a Winchester bushel.

Composts. Much attention is paid to the making of compost dung-hills in many parts of Westmoreland. They are most commonly spread upon grass, and experience has shown, that they at once improve its quality, and check for years the progress of the moss. One hundred cart-loads of earth or rakings of the roads, mud, or rotten leaves, and fifty of dung, carefully mixed with 300 Winchester bushels of lime, are laid upon three acres with great advantage.

Water. The purest water has a great portion of earth suspended in it by various impregnations. Wherever it is allowed to stagnate it deposits part of this earth, which long experience has shown to be a most efficacious manure. The watering of land is practised on a small scale in many parts of Westmoreland, and always with great success.

VII. LABOUR.

Labour is dearer in Westmoreland than it is in almost any of the counties either to the north or south of it. This probably is owing to the great number of small landholders, or *statesmen* above-mentioned, who doing the work upon their own estates, with their own hands and those of their families, are perhaps disinclined to labour for other people.

Servants by the year. A hynd may be hired by the year at twenty pounds, a house, a garden, and a patch of ground to grow potatoes; and an unmarried man at from ten to twelve guineas a-year, and board and washing.

By the day. The wages of an ordinary labourer are from 1 s. 4 d. to 1 s. 8 d. a-day; he begins to work between six and seven, rests an hour at dinner, and leaves it off between six and seven in the evening. The labourers on the highway from Shap to Kendall receive

1 s. 9 d. a-day for nine months in the year, and 1 s. 6 d. a-day for the other three months.

By the month. On the large farms, in the seasons of hay and harvest, it is not unusual to hire labourers by the month of four weeks, at the rate of L. 1 : 12 : 6, and victuals. They breakfast on milk-pottage and bread and cheese, receive a pint of good beer in the forenoon and another in the afternoon; they dine on meat boiled, baked, or roasted, and potatoes or pudding; sup on cold meat, and have plenty of common beer to drink through the day. They begin in the morning as soon as the corn is dry, rest none but while at meals, and continue as late as they can see to work. Four men may cut, tie, and stook a customary acre in a day, leaving a stubble from nine to fourteen inches in length.

Cutting of Corn per acre. When done by the piece, the cutting of an acre by the sickle, the scythe not being used in the reaping of any sort of grain, may cost 9 s. and if the crop be very heavy, 10 s. or even 10 s. 6 d.

Cutting of Hay per acre. The price of mowing a customary acre of grafs varies from 2 s. 6 d. to 3 s. 6 d. and a man usually mows an acre in a day.

Per day. When hired by the day, a mower's wages may vary from 1 s. 4 d. to 1 s. 10 d. and victuals.

Mason's Wages. Masons in summer have from 2 s. 2 d. to 2 s. 6 d. a-day, or 1 s. 2 d. or 1 s. 6 d. and victuals; and in winter 4 d. or 6 d. less. At Millthorpe a few are hired all the year at 1 s. 10 d. a-day, wet or dry. When they do their work by the piece, and furnish every thing, they are paid 2 s. or 2 s. 6 d. a square yard for a wall of two feet in thickness built with lime; if materials are furnished to their hand, they are paid 8 d. or 10 d. a-yard. Seven yards and a half in length of a dry stone wall five feet and a half in height cost 1 s. 6 d. or 1 s. 8 d. in building.

Carpenters Wages. The wages of a carpenter or common country wright, differ very little from those of a mason.

Thresher. A farmer's own servants generally thresh out the corn. When persons are hired for this purpose, they receive about 1 s. for threshing a load of seven and a half bushels of oats, and 1 s. 3 d. for that of barley;

and from 4 d. to 8 d. a-boll of rye, consisting of two Winchester bushels.

Miller. Farmers commonly have their meal made from oats of their own growing. The miller receives 4 d. a-load, for drying the oats. If they are good in quality, a load of seven and a half bushels will yield 176 pounds of meal, besides paying the miller his toll for grinding, which is guessed to be about four *per cent.* Wheat is made into flour for 4 d. a bushel. Numberless streams rendering the precarious assistance of windmills unnecessary, there is but one in the county, and it is employed in grinding bark for the tanners at Kendall.

Thatcher. A thatcher receives about 1 s. 4 d. a-day and victuals, or 2 s. 4 d. without victuals.

Slater. Slating is measured by the rood of forty-two and one-fourth square yards, and costs in the workmanship 12 s. or 13 s. a rood; in the vicinity of the slate quarries, the slater will find all materials and labour for 45 s. or 50 s. a rood.

Tailor. A tailor gets in some places 10 d. in others 1 s. a-day and board.

Mole-catcher. The mole-hills are carefully spread in most parts of the county, and the fields are cleared of moles at the rate of 3 d. an acre where they have not been caught before; 2 d. an acre are paid the second year, and a penny or three half-pence yearly thereafter.

Maid-servants by the year. In some farmers families, where they are hard worked, maid-servants receive L. 6 a-year. Their ordinary wages in other families may be about L. 4, 10 s. or perhaps L. 5. When they do not change their service, if strangers in the parish, care is taken to vary their wages every six months, to prevent them from acquiring a settlement, to which they would be entitled were they hired for a-year, or were their wages to continue the same for that period.

By the month. In hay-time and harvest, when hired for a month they get from 16 s. to 24 s. and board.

By the day. When hired by the day in harvest and hay-time, they receive 8 d. or 10 d. and victuals, or 1 s. 3 d. or 1 s. 6 d. without victuals. At other seasons they are paid with 8 d. 10 d. or 1 s. a-day. Their times of entry, and of leaving off work, their hours of labour and of rest, are very various.

VIII. *LIVE STOCK.*

Horses. As there is but a small portion of the county under crop, the horses are not numerous, nor has any considerable attempt been made to improve the breed of these useful animals. They are small, not exceeding fourteen hands and a half in height, are said to be hardy, but they are neither strong nor handsome; sixteen or seventeen pounds are reckoned a good price for a horse at five years old. They are often turned upon the commons in the intervals of labour, which, as the farmer very probably has neither turnips nor fallow, are very frequent in the summer months.

Black Cattle. The attention that was formerly paid to the breed of black cattle has rather diminished of late years. They are long-horned, very much resemble the Lancashire breed, and, when kept to a proper age, grow to a great size. As a heifer of three years old can be sold for as much as an ox would fetch at four, it is rare to see a bullock of the country breed; but to judge from those of all ages in the pastures at Lowtherhall, they are excellent feeders, and possess, in an eminent degree, the very desirable property of laying the fat upon their backs and other valuable parts. The heifers and barren cows, if well chosen, are confessedly good thrivers, and are in great request among the graziers of Yorkshire and Lancashire. Not many years ago there was killed, at Lowtherhall, a bullock of the country breed, that weighed thirty-three stone a quarter.

Swine. The swine of Westmoreland, though not large, are good in their kind. Farmers, butchers, and others who kill swine, often dispose of the hams to persons who make a trade of curing them for sale. Perhaps there may not be any thing peculiar in the mode of making hams in this county; but it is believed that a detail of the process may be entered here without impropriety.

The hams are first rubbed very hard, generally with Bay salt; by some they are covered close up, by others they are left on a stone bench to allow the brine to run off. At the end of five days they are again rubbed as

For Remarks &
Obser

in ploughing the sides of the hills, which are very numerous and steep in the arable lands.

Carts. The carts are of various descriptions and sizes. Those most commonly used may be fifty-two inches in length, thirty-six in breadth, and fourteen and one half inches in depth, containing less than sixteen cubic feet. They are mounted in some places upon clog-wheels, and have two-thirds of their length before the axle which is of wood. There is scarcely a farming waggon to be met with in the county; it being a general opinion that four horses in four separate carts will draw a greater weight than if they were yoked together in a waggon.

The winnowing machines, which are here very common, and the harrows, are both of the ordinary kinds. The drill husbandry being yet in its infancy there are few instruments for hoeing or drilling.

X. WEIGHTS AND MEASURES.

Great diversity of weights and measures prevails in Westmoreland as is the case in almost every county in Great Britain. The pound consists of 12, 16, 18, 20, or 24 ounces, and the stone of 14, 16, or 20 pounds. There is a Winchester bushel, a customary bushel equal to three of these, a bushel of two bushels for the sale of potatoes near Appleby, and one of two and a half for that of barley. Rye is sold by the boll of two bushels, and potatoes by the load of four bushels and a half heaped, or more generally a bag which holds seven and one half bushels is filled and sold for a load of potatoes.

There is the statute acre of 4,840 square yards, the customary acre of 6,760 raised from the perch of six and one half yards, and a third acre on the borders of Lancashire, raised from the perch of seven yards, containing 7,840.

XI. BUILDINGS.

The lands of the *statefmen* and farmers in this county lie so intermixed that their habitations and offices, which are often built together in little straggling villages, must of necessity be very inconvenient for farming purposes; but convenience has been little studied even on those farms whose fields lie unmixed. The principal structure is a barn, which, at the same time that it has a stable and cow-house underneath, is frequently large enough to contain the whole crop of both corn and hay, so that it is rare to see a stack of either. These barns are often twenty yards in length, five in width, and five yards in height in the side walls. The expence of bringing all the materials from a moderate distance, and of building a barn of such dimensions with a slated roof, may be about seventy guineas. The houses are generally covered with slates, which are found in several parts of the county. The slates are not nailed on boards, but hung with oak pegs on laths, and plaistered in the inside of the roof. A few houses are still thatched with wheat straw which is sold from 1s. 2d. to 1s. 8d. a threave of twenty-four sheaves.

Stone Walls. The most ordinary fences in Westmoreland are dry stone walls, which vary in height and thickness. The expence of building these may be 1s. or 1s. 3d. a-rood of seven yards in length. At Shap walls five and one half feet high are built for 1s. 6d. or 1s. 8d. a-rood.

XII. DRAINS.

The importance of having the land lie dry, and of preventing the water, which in wet weather breaks out upon the declivities of the hills, from chilling the fields below, is well known in Westmoreland. The method of draining is fast improving, and the practice is daily gaining ground. The drains are generally walled in the

sides and covered with large stones out of the reach of the plough.

XIII. HIGHWAYS.

The great roads leading through the county are kept in excellent repair by the sums collected at the turnpike gates, and when these prove insufficient, by a portion of the labour of the parish, or of the pound-rate, which may be levied in its aid.

The parochial roads are made and kept in repair by six days labour of the parish, and by a rate not exceeding sixpence in the pound, which the surveyors may levy with the consent of the quarter-sessions; some of these are tolerably good, and others are annually improving. Many of them scarcely exceed the smallest legal breadth allowed by statute, which is eight feet.

XIV. PRICE OF PROVISIONS.

The difference in the price of provisions in a county so small as Westmoreland, cannot be very great. They are, however, somewhat cheaper in the north and east parts than they are in the south parts, which are more within the reach of the markets of Lancaster and Liverpool. Beef in Kendall market, in the month of October this year, was sold at 3d. or 4d. a-pound, and a choice cut at 4½d.; in spring it often rises to 6d. a-pound. Mutton, which in spring often rises to 7d. a-pound, was sold at 3d. 3½d. or 4d. Pork was sold at 3d. or 4d. As all the bull calves are carried to market, veal is for the most part cheaper than the other kinds of butcher meat, and yet in spring it is sometimes sold as high as 5d. a pound. Potatoes brought 1s. 4d. a bushel, or 5s. 6d. or 6s. a load; in spring they are often sold at nearly the double of these prices. Oat meal is bought in some places by a measure of sixteen quarts, at a price which fluctuates from 1s. 4d. to 2s. 6d.; in others by a peck of 20 quarts, which in summer 1793 was worth 3s. Butter

For Remarks and additional
Observations.

was sold from 7d. to 9d. a-pound; in winter the price seldom rises above 11d.; a stone of 16lbs. of 20 ounces cost 11s. 6d. and a firkin of 56lbs. neat, from 30s. to 35s. Cheese in the country cost 3d. a-pound, and new milk 1d. a-quart, which in Kendall is contracted for all the year at 1½d.

A turkey costs 3s. 4s. or 5s. according to its size; a goose 1s. 6d. or 2s. or when sold by weight 3d. a-pound; a hen from 7d. to 10d. and a chicken from 4d. to 8d. Eggs fluctuate in their price from 2½d. to 6d. or even to 9d. a-dozen. Ducks are sold from 1s. 4d. to 2s. a-pair, teal at 4d. a piece, woodcocks at 4s. or 5s. a brace, and pigeons from 4s. to 6s. a dozen.

Salmon caught in the Lune is sold from 4d. to 8d. a-pound; that which is brought from Carlisle from 3d. to 1s. 2d. Char are sold about 7s. a dozen, trouts at 4d. a-pound, mussels at 2d. or 3d. a quart, flounders from 1d. to 6d. a piece, eels at 2d. a pound, and rabbits, without the skins, at 1s. the pair. Honey in the comb costs 1s. a pound.

II. MISCELLANEOUS OBSERVATIONS.

I. IT is not unusual to hear people exclaim against the increase of luxury, and the alteration that has taken place in the mode of living in their time. The labourer lives as well now as the farmer did forty or fifty years ago; the farmer as well as the man of small landed property; and so on: and is this in any respect to be regretted, or is it not much better for them all? But persons generally cry out most loudly against the rank immediately beneath them, without recollecting that their own mode has been changed in nearly the same proportion as the one which they are so ready to condemn*.

Fifty years ago the price of butcher-meat at Martinmas was from 1½d. to 2d. a-pound in Burton market, and eighty beasts were sometimes slaughtered in a day, and bought to be salted for winter-provisions. From that time, except a few at Christmas and at Easter, no cattle were killed there till they were fattened upon the pastures in summer. Farmers, in those days, seldom eat any butcher-meat; they lived on bread and butter, and what other little matters the farm afforded. Now labourers generally breakfast on that very ancient food pottage, with the help of a little cheese and bread; they dine on butcher-meat and potatoes, or pudding; and sup on potatoes, or pottage, or bread and cheese.

The bread generally eaten in the county is made from oat-meal. Water and oat-meal are kneaded together into a paste without any leaven; this paste is roiled into a circular cake of about twenty inches in diameter, and is placed upon a thin flat plate of iron called a *girgle*, under which a fire is put, and the cake is baked, goes by the name of *clap-bread*, and is to be seen at almost every table in the county. This very particular description of

* Spencer's Travels.

For Remarks and additional
Observations.

baking cakes may appear too minute, or altogether unnecessary, and it owes its place here to the request of some persons of rank who wished to see it recorded somewhere. The meal is mostly ground to such a degree of fineness that a measure of sixteen quarts will weigh sixteen pounds. Farmers, labourers, and manufacturers usually have fifteen cakes made from sixteen pounds of meal, and as many baked in a day as will serve their families for a month. Such of the gentry as eat this sort of bread, most of them now eating bread made from wheat, have it baked much more frequently, and also much thinner. A labouring man will eat sixteen pounds of meal made into bread in a fortnight; the price of sixteen pounds of meal is variable from 1s. 6d. to 2s. 6d; the medium is 2s. which gives 1s. a-week for each labourer for bread; his cottage and his fuel cost at least as much more. His wages for three quarters of a-year are 9s. a-week, and 8s. a-week for the other quarter; but making allowance for broken days 8s. a-week may be considered as the full amount of the price of his labour; and indeed a good labourer may be hired by the year at that rate. Hence there will remain 6s. a-week from the labour of the man for the remainder of his own sustenance, the sustenance of his family, and the cloathing of them all.

II. It might be useful to know what proportion of the lands in the county is possessed by that numerous and respectable Yeomanry already mentioned as occupying small estates of their own from L. 10, or L. 20, to L. 50 a-year. These men, in contradistinction to farmers or those who hire the land they occupy are usually denominated *statesmen*. They live poorly, and labour hard, and some of them, particularly in the vicinity of Kendall, in the intervals of labour from agricultural avocations, busy themselves in weaving stuffs for the manufacturers of that town. The consciousness of their independence renders them impatient of oppression or insult, but they are gentle and obliging when treated by their superiors with kindness and respect. This class of men is daily decreasing. The turn-pike roads have brought the manners of the capital to this extremity of the kingdom. The simplicity of ancient times is gone. Finer clothes, better dwellings, and more expensive viands are now sought

after by all. This change of manners, combined with other circumstances which have taken place within the last forty years, has compelled many a *statesman* to sell his property, and reduced him to the necessity of working as a labourer in those fields which perhaps he and his ancestors had for many generations cultivated as their own. It is difficult to contemplate this change without regret, but considering the matter on the scale of national utility, it may be questioned whether the agriculture of the county will not be improved as the landed property of it becomes less divided.

III. It is painful to one who has in his composition the smallest spark of knight-errantry to behold the beautiful servant maids of this county toiling in the severe labours of the field. They drive the harrows, or the ploughs, when they are drawn by three horses; nay it is not uncommon to see sweating at the dung-cart, a girl, whole elegant features, and delicate nicely-proportioned limbs seemingly but ill accord with such rough employment.

A judgment of the refinement and civilization of a people has been often formed from their treatment of the fair sex, and in this respect France was formerly held up to the world as a model. Unfortunately the manners of nations are too often painted by those who have been conversant only with persons in what may be called high life; but were it allowable to apply this rule even to France, and to look for specimens into the lower orders of society, and it is there surely that the most faithful representatives of national character or manners are to be met with, it would be found that the women, even in the boasted days of her monarchy, were doomed to the severest labour, to load the dung-cart, to saw the wood, to thresh the corn.

The common people of both sexes, wear, especially in the winter season, instead of shoes, *cloggs*, which differ from shoes in this, that the bottom part is made of wood. The wood is generally either birch, alder, or sycamore; it is about an inch in thickness, and a rim of iron is nailed round the bottom of it. A pair of *cloggs* costs 3 s. 6 d; they keep the feet warm and dry, and, with good care, will last a twelvemonth.

III. HINTS FOR IMPROVEMENTS.

For Remarks and additional
Observations.

I. ARABLE LANDS.

Clover. IN most counties of England the land is sown with grass seeds, and left to lie for some years with a view to refresh and enable it to bear crops of corn; but in Westmoreland it is ploughed and sown with corn in order to prepare it for grass. When it hath been cropped for three years, and it is judged that the soil is sufficiently reduced, and that the moss is quite destroyed, the land is left to itself to grass over. The first crop of hay is never either weighty or good in quality; the second is generally very superior in both these respects to the first, and so favourable are the climate and the soil to the growth of grass, that the third crop is often so abundant as to be let for two or three pounds *per* acre, and of a quality so excellent that in several places cattle are fattened upon it in winter for the markets of Lancaster and Liverpool. But even these best crops are far inferior in point of value to those that would be produced by the same fields, were their natural aptitude to grow grass directed to the production of clover and rye-grass. The prejudice that prevails almost universally in Westmoreland against these artificial plants is a great obstacle to the improvement of the husbandry of the county, and must be overcome before the arable lands can be brought to that degree of cultivation of which they are susceptible.

It is said that hay made of clover and rye-grass is much coarser than that which is made of the natural grasses; and that these artificial plants giving place to the natural ones, perish at the end of two or three years, and therefore ought never to be sown at all.

The opinion is conceived to be ill founded which holds that hay made of sown grasses is bad in quality; long experience and continued practice having shown

that horses are very fond of such hay, and that when even fed upon it alone they are able to do a great deal of hard work. It can hardly be seriously asserted that hay made of the trash produced spontaneously by the land the two first years after it has been cropped with corn is better than hay made of clover and rye-grass. The artificial grasses seldom or never perish at once at the end of either the second or third year: they disappear gradually, making room for the natural herbage to occupy their place, which it is imagined it would be found upon trial to do with much more profit to the farmer than would have accrued to him by managing his lands in the ordinary way; for the superior value of the hay the first two years would far more than reimburse him for the expence of the grass seeds, and he might still have his favourite natural hay after these had died entirely out.

This is stated upon the supposition that the field was to be allowed to lie eight or ten years in grass, as is the custom at present. If it were to be broken up at the end of the first or second year it would be found in good condition for bearing a crop of corn, the roots of clover, it is well known, being a great improver of the soil: but this way of cropping the lands will enter with more propriety into that part where an alteration of the present course will be suggested.

In the year 1792 Mr. Smith at Henridding in the parish of Burton sowed a close containing exactly two acres and a half Lancashire measure, with 48 lbs. of red clover seed amongst a crop of barley for which the land had been slightly manured after fallow wheat. This field is in Lancashire, but being situated within an hundred yards of the county of Westmoreland it may be mentioned here without impropriety, and it is selected merely because the particulars respecting it are better known to the writer of this Report than those in regard to any field of clover in the county that was the object of his survey. It was mown in the month of July 1793 and it then yielded a crop of twenty two single-horse cart-loads of hay. It was mown a second time in September and produced eighteen of the same cart-loads. It was depastured with nine sheep from the time the last crop was carried off till the beginning of November, and the foggage was then tolerably

For Remarks and additional
Observations.

'good. Let the most strenuous advocates for natural grafs say whether they ever had a crop so valuable!

Where the land is intended to be depastured the argument will apply with treble force, and the decided preference given by cattle of all kinds to the green herbage of the artificial, over that of the natural grafs, ought to remove every doubt from the mind even of those who are the most strongly prepossessed in favour of the present practice.

In front of Mr. Carus Wilson's new house near Kirkby Lonsdale, there lies a field of sixteen acres which was sown with grafs seeds amongst a crop of barley in the year 1792. It was depastured in 1793, and maintained *three times* more stock than he would have expected it to maintain, had it been left to itself in the ordinary way. Farmers, the most prejudiced against sown grasses, saw and confessed the force of the experiment, and it is not to be doubted, will follow an example which tends so materially to promote their interest.

The cultivation of clover is perhaps the greatest improvement in the art of farming which has been discovered in modern times, and it is equally matter of regret and of surprise, that what is at once so easy and so profitable is not yet become universal, and it furnishes a strong instance of the difficulty with which old habits and prejudices are rooted out, even when self-interest is concerned in their extirpation.

Turnips. The climate and soil of the valleys of Westmoreland are well suited to the cultivation of turnips, which must be carried on to a considerable extent before the agriculture of the county can be improved in any considerable degree. Experience has shown that this crop and the mode of husbandry usually connected with it, are able to fertilize not only particular farms, but even to improve whole counties. The most profitable and the least troublesome way of disposing of this crop is to fatten sheep with it. A customary acre of turnips, if the crop is good, will feed twenty-five sheep weighing sixteen pounds a-quarter from 1st November to 1st April; even supposing the sheep made no advance in these five months, the very encrease of the price of the mutton

from 4d. to 5½d. or 6d. a-pound, would bring a profit to the farmer as considerable as it is easily calculated. When to this there is added the value of what they would gain in point of weight, the profit, it is hoped, will appear to be so great as to make the desire to grow turnips irresistible, and quickly to increase the quantity an hundred-fold beyond what it is at present.

Where the land is very dry the sheep may be penned upon a small part of the field of turnips, and shifted to another as those in the first part are eaten up; but if there is a field of grass near at hand, the superior improvement of the sheep will pay for the labour of carrying the turnips to be eaten on that field where they will lie dry and clean, and where the turnips will be less trampled on and abused.

Rotation of Crops. It is the general opinion of farmers in Westmoreland that their lands are better suited for grass than for bearing crops of corn, and they are ploughed for three or four years, not with an expectation that the corn will be more profitable than the grass, but in order to renovate them for grass, and to destroy the moss which in a few years over-runs all their ley grounds: but there are some who are persuaded, that the neat profits of the three or four years the lands are under crop usually exceed the profits of any other three or four years while the same lands lie in grass, and they think that the fertility of the land for the production of either grass or corn would be injured by ploughing for a longer term, or after shorter intervals of rest.

Whether the lands under the present system are most profitable to the farmer when they are in corn or in grass it is not necessary now to enquire, because, with all due deference to the general practice and opinion of a whole county, it is presumed that a mode of husbandry and a succession of crops may be pointed out, which upon trial would be found far more profitable than those at present followed.

The uniting what may be called the Clover and the Turnip Husbandry is the best method hitherto discovered of keeping dry lands in a state of continual fertility, and for this the light and friable soil of the vallies of West-

For Remarks and additional
Observations.

moreland is well calculated. Instead of the common rotation of oats, barley, and oats again, and then leaving the land to grafs-over of itself, the following course of crops might be introduced with advantage both to the public and the individual. When an old close of good land is broke up it should be sown with oats, as is done at present; after the oats it should be manured and sown with turnips in drills thirty inches asunder so as to admit of being horse-hoed; next with barley or oats, and always with grafs seeds at the rate of about sixteen pounds of clover and a Winchester bushel of rye-grafs to the statute acre. If it is intended to pasture the field, the grafs seeds can hardly be sown too thick; if it is to be made into hay, the quantity of seeds above-mentioned will be found amply sufficient. The first year's crop of grafs may be mown twice, or after the first cutting it may be eaten by fattening cattle; or it may be eaten by sheep till the beginning of June, saved after that and mown in August, and it will still produce a valuable crop of foggage or after-math. It should be de-pastured with cattle or sheep the second year, and the third year likewise if it shall be thought proper to keep the field so long in grafs.

This course would preserve the land in a state of perpetual *health and vigour*, did it not, taking pleasure in variety, dislike a too frequent repetition of the same crops. After some rounds it will be proper to encrease the quantity of clover seed, and at last to bring it seldom into succession, for if too often sown it will be rejected entirely. When this is apprehended the course may be varied or lengthened by the introduction of a crop of pease, or of drilled beans where the land is deep and moist, and wheat after either of these, or after a clean summer-fallow; or by leaving the land some years longer in grafs than usual.

When it shall be proved and known that potatoes are a cheap and nourishing food for horses, the demand for that valuable root will become nearly as unbounded as that for turnips is; and even although they exhaust the land, they may then be introduced into the course with much advantage to the farmer.

It is not pretended that the rotation of crops here recommended would suit all the arable lands of Westmore-

land, but it is believed that on a very large proportion of them it might be followed with a certainty of success. The cold, wet, stiff soils should be summer-fallowed instead of being cropped with turnips; wheat should be sown after the fallow, and clover, or oats and then clover after the wheat; but it is impossible, and were it possible it would be improper, in a work of this general nature, to mention how all the varieties of soil should be treated, and to descend to the minutiae of ploughing, and sowing, and ten thousand little matters that continually demand the farmer's attention, and that are always varying with the weather. In these his own ingenuity must assist him, and there all his ingenuity will be necessary; for his art, though apparently easy, is attended with a thousand difficulties.

II. SHEEP FARMING.

There is room for great improvement in the management of sheep, as well upon private estates as upon the commons, but while these last continue in their present deplorable state it would be in vain to attempt any alteration upon their stocks. The case however is different with store farms properly so called, where the breed or treatment of the sheep differs very little from that of those upon commons, although there can be no reasonable doubt of their being well adapted to the keeping a far more profitable sort than is to be found there at present. There is no weight whatever in the argument which has been often used against the introduction of such a breed from the scarcity of food and the coldness of the climate, the British Wool Society having proved that "the finest breeds of Spain or of England will thrive on the wilds of the Cheviot hills, and that very fine-woolled breeds may be propagated on the most mountainous districts of Scotland." There are numbers of sheep at the Feroe islands, which lie in latitude 63°, and even in Iceland, part of which is beyond the Arctic circle, they are to be found in great abundance on every farm; and there nature sports in a great superfluity of horns, as if the scanty pittance of food which the animal can pick

For Remarks and additional
Observations.

up in that bleak and frozen climate were more that sufficient for the support of the carcase and the fleece.

III. COMMONS.

The extensive and valuable commons of Westmoreland loudly demand the interposition of the legislature in a country that boasts of attention to its interest. Some immediate alteration in their state, whether by division or by sale, cannot be too eagerly pursued, nor too strongly inculcated; nor can it be too generally made known that there are many wealthy people living near some of the best commons in the county (which is a point of great importance) who do not think it worth while to avail themselves of their right of pasturage.

Every person sees the necessity of some material change with regard to the commons, and now that thinking men are turning their attention to this important subject, there is no doubt that some plan will be fallen upon by which both the public and the individual may reap the full benefit of these at present dreary wastes, which are a reproach and disgrace to the nation. But it cannot be expected that any measure however wise, or any proposal however advantageous, can meet with universal approbation. It will probably be reprobated by some whose prejudices it will alarm, and with whose little interests it may be supposed to clash. Till something of greater consequence be accomplished, the reduction of the stint, where such is already established, or the establishment of a moderate stint upon commons that are perfectly free, ought not to be delayed one hour, for at present they are of little, if of any use, either to those having a right of commonage or to the nation at large.

A general inclosure-bill for the whole kingdom would save the expence of separate applications to parliament for the division of particular commons, but there are many barren and rocky commons that would not be in any wise benefited by inclosure; and although the interests of a few individuals ought to give way to those of the community, there are numerous instances where both would be injured by the operation of such a bill, for it would at once be ruinous to many proprietors to be obliged

to inclose each his share, often at an expence greater not only than the value of that share, but in some instances greater than the value of the fee simple of that farm or estate in right of which he claims, and prejudicial to the public by interrupting the sheep-walks upon the mountainous districts which ought to be as free and open as possible.

The principal part of the stock kept upon the commons consists of sheep, either of the breed of the county or brought from Scotland. The ewes are wintered in the inclosures, and sent back to the commons in April; the wedder-hoggreels are always wintered the first year on the low grounds at the expence of 2s. a-head, are sent back to the commons about the same time with the ewes, and remain there till they are sold to the grazier. They may fetch at an average 11s. a-piece; add to this the value of the wool, and 15s. may be about the sum received for every wedder sheep that arrives at the age of four years and a half.

Scotch hogs are bought at about 8s. 6d. a-piece, and are kept two years upon the commons when they may be worth 10s. 6d. or 11s; add to this the price of three fleeces of wool, and the whole sum received for every sheep delivered may be about 14s; from this subtract the original price, two years interest of the money, expence of herding for the first two months, of thrice washing and clipping, of twice salving, the value of the risk of bad payment from the drover or grazier, the loss by straying, and what is often much more considerable by death, and say what profit remains.

It has been computed that one third of all the sheep in Westmoreland died in 1792. Great calamities are often exaggerated, though no doubt the loss must have been prodigious when it was estimated so high.

Twenty shillings are reckoned an ordinary profit for keeping a Scotch beast a-year; subtract from this the price of wintering on the low grounds and in the straw yard, interest of the cost, value of the risk of drovers, loss by death from fatigue estimated at 2½ per cent, by disease, and now and then by one tumbling into a peat-moss, and say what advantage arises from this adventure.

For Remarks and additional
Observations

Seven shillings and sixpence are thought an ordinary profit for keeping a little Scotch beast on a common from May to October; make the same deductions as in the former article, with the exception of the value of the winter's keeping, and see how little remains for the rent of the land.

It is not possible to place this matter in a more striking point of view than by repeating, that on several commons the liberty of keeping an ox, or ten sheep, for a whole year may be hired for *sixpence*.

Improvement of Commons by Liming. Great portions of many of the commons might be improved at a small expence by the application of lime, which is found in most parts of the county, and might be cultivated with the certainty of great advantage. When ploughed great care ought to be taken to adopt a proper succession of crops, and to lay the lands down with grass seeds in a very few years; because when exhausted by over-cropping they are reduced to a worse state than they were in before, and there is no way yet discovered of preparing lands for a repetition of a hearty dose of lime.

By Paring and Burning. Many of the level moory parts might be converted into arable lands by paring and burning, which are well understood by several persons in the county, and have been practised with more or less success on some private estates.

By Planting. There are many thousands of acres utterly incapable of cultivation by the plough; and, in the paper prefixed, the Bishop of Landaff has shown, in a manner equally ingenious and novel, with what advantage these might be covered with wood. It is well known that trees flourish with the greatest vigour on soils far more barren, and in climates much colder than that of Westmoreland. There are stately oaks at Niagara, which, though not in a high latitude, experiences a degree of cold in winter far beyond what is ever felt in this country. On the western coast of America, in latitude 61°, the very summits of the hills are covered with wood, and there is plenty of trees at Norton's Sound in latitude 64° 55"; and timber for the use of ships in the British navy has been cut even at Kamtschatka, the very end of

the earth, where the soil is barren in the extreme, and covered with summer snow, and where the winters are vigorous beyond the conception of an inhabitant of Europe.

That Westmoreland has been a wooded country is evident from trees found in mosses on the highest hills; and statutes and regulations made long after the conquest, since which time the climate has not been changed for the worse, are full of the mention of forests, and chaces, and parks, and mastage, and pannage, and vert, and venison, and greenhue, and regards, and foresters, and verderors, and an hundred other names and titles respecting the preservation of the woods and the game.

The valuable plantations at Lowther-hall, the seat of the Earl of Lonsdale, show how well calculated the soil and climate of Westmoreland still are for the growth of timber, which it cannot be questioned would thrive over all the county as well now as it did five hundred years ago. The profits of planting are so distant, and so few persons, looking eighty or an hundred years beyond the present day, are willing to sacrifice a paltry interest for the sake of a remote posterity, that perhaps it may be necessary for Government to encourage by premiums what in the end would turn out so greatly to the advantage of the community. These might be distributed with much propriety by the Board of Agriculture, whose income seems to be far too moderate for the support of so important an establishment, the objects of whose superintendence are innumerable, and the field of whose operations is extensive as the island itself.

To the north of Shap lies a very extensive common called the Scars, where, between two and three thousand acres of level white land, in a state of nature, offend the eye of every traveller and cry aloud for improvement: the means of which it contains in immense quantities of limestone upon its very surface. It is more than twenty years since an act of parliament was obtained for a division of this common, and that it has not been carried into execution is the more to be regretted, as a large portion of it in the opinion of very judicious persons in the neighbourhood, might be easily made as valuable as the little

For Remarks and additional
Observations.

closes of Shap, which are let from 30 s. to 40 s. an acre.

On the south of Shap lies another common called the Fells, which is, in general, incapable of cultivation by the plough, but it is not ill suited to the maintenance of sheep, and the remains of the celebrated *Shap thorn*, near the road to Orton, show that plantations would succeed even on those places of it which are most exposed.

Near the mouth of the river Kent there is a marsh of considerable extent, common to Havertham and Millthorpe, and, like all the other commons in Westmoreland, greatly overstocked. It would not be difficult to bank off the sea from this marsh, and to convert it into corn-fields; but if this were thought not advisable, its value might be instantly more than doubled by the establishment of a moderate stint, or still farther increased by a division.

Part of Crosby common might be easily converted into arable and good pasture land, and two clumps of trees of a considerable size prove that its worst parts might be planted with success.

From Crosby and Meaburn, a dry level common extends to within three miles of Appleby. It is covered with heath, and is capable of various modes of improvement.

The commons of Knock, Newbigging, Kirkby-Thore, and Marton, lie contiguous, and form a tract of several thousands of acres, dry, soft, and improveable. A great part of these is covered with strong brackens, and is superior in quality to the soil of many farms in the neighbourhood, and well suited to the cultivation of turnips and clover.

This specimen of the commons in Westmoreland will, it is hoped, be deemed sufficient; for it would be tedious and painful to enumerate them all. It is difficult to behold the desolate state in which they lie without surprise at the nation having so long delayed taking measures for their improvement. The wastes and commons in this county, and throughout England in general, have been elegantly called a public treasure in the hands of private persons: it is to be hoped that the time is not very distant when this important treasure shall be opened, and its contents shall prove equally beneficial to the individual, and to the public at large.

It is impossible to look forward without emotion to that day when these neglected wastes shall have received that degree of improvement of which they are susceptible; when they shall wave with valuable crops of corn, bleat with profitable flocks, or be clothed with stately timber; and when there may be seen in every corner the industrious husbandman at once enriching himself and advantaging the community in a manner the most substantial.

Contemplating the matter in this view, who but must exclaim what a noble field for exertion! What a source of national wealth yet in store! "More certain than the profits of commerce, more permanent than those manufactures."

[illegible]

C O N C L U S I O N.

Such are the reflections and observations that occurred in a Survey of the state of the stock and husbandry in the county of Westmoreland, made in the months of October and November 1793, at the request of the newly established Board of Agriculture. What success has attended the attempt to place this important matter in a just light, others will judge but it will be doing no more than justice to admit, that no pains have been spared in the execution of this task, which others might have performed with more ability, but not with greater alacrity or zeal.

It is impossible to conclude this Report without mentioning to the Board the very flattering manner in which the person commissioned by them to make this Survey, was received by all ranks and descriptions of persons in the county of Westmoreland. Every possible aid was given by the two respectable Members of the Board resident in the county. The other individuals who assisted him are too numerous to be discriminated; but the writer of this paper will ever remember their very polite attention with gratitude, and his short residence in that part of the kingdom, with peculiar feelings of pleasure and respect.

What gratitude is due to HIM, who first called the attention of the nation to its most important interests, and whose unremitting efforts are directed to promote the good of his country? How well does He deserve, and what a sure road has He chosen to immortal fame, that will survive the ravages of time, and smile at the fleeting celebrity of martial achievements?

GENERAL VIEW
OF THE
AGRICULTURE
OF THE COUNTY OF
NORTHUMBERLAND,
WITH
OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

BY
MR. JOHN BAILEY,
OF CHILLINGHAM,
AND
MR. GEORGE CULLEY,
OF FENTON, IN NORTHUMBERLAND.

Ed. 1814.
DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE
AND INTERNAL IMPROVEMENT.

LONDON:
PRINTED BY C. MACRAE.

M DCC XCIV.

W. W.

S455
A2
v.6
no.3

TO THE READER.

IT is requested that this paper, may be returned to the Board of Agriculture, at its Office in London, with any additional remarks and observations which may occur on the perusal, *written on the margin*, as soon as may be convenient.

It is hardly necessary to add, that this Report is, at present, printed and circulated, for the purpose merely, of procuring farther information respecting the Husbandry of this district, and of enabling every one, to contribute his mite to the improvement of the country.

The Board has adopted the same plan, in regard to all the other counties in the united kingdom; and will be happy to give every assistance in its power, to any person, who may be desirous of improving his breed of cattle, sheep, &c. or of trying any useful experiment in husbandry.

LONDON, FEB. 1794.

5

GENERAL VIEW
OF THE
AGRICULTURE
OF THE COUNTY OF
NORTHUMBERLAND.

|

|

|

|

INTRODUCTION.

THE County of Northumberland, including those parts of the county of Durham, called Islandshire, Norhamshire, and Bedlingtonshire,

Is bounded on the east by the German ocean, 60 miles
 west by Roxburghshire, - - 50
 and Cumberland, . . . 47
 north by Berwickshire, - 18
 south by the county of Durham, 50

Making the whole circumference . . . 232 miles.

It is situated between the latitudes of 54 deg. 51 min. and 55 deg. 48 min. north ; and longitudes of 1 deg. 00 min. and 1 deg. 27 min. west from London : its greatest length from north to south is 64 miles, and breadth 48 ; and contains 1980 square miles, which may be divided into } Acres.
 lands that are, or may be cultivated by the } 817200
 plough, - - - - - }

And mountainous districts improper for tillage, 450000

Making in the whole . 1267200

Of the mountainous districts, those around Cheviot are the most valuable ; being, in general, fine green hills, thrown (by some of those convulsive changes which this globe has at some

1

some time experienced) into a numberless variety of forms, whose sloping verdant sides inclose and shelter many deep narrow glens. Through the whole of this district no mineral, or other kind of stone, is found, except granite or whinstone; which seems to compose the greatest part of these mountains. From its contexture and colours---from the shape of the hills---and the sharp-pointed gravelly soil they are covered with---and from a species of lava found in the lower districts, it is more than probable, that these hills have been formed by volcanic eruptions. They extend from the head of Coquet, down to Allevinton; from thence northward to Prendwick, Branton, Ilderton, Wooler, Kirknewton, and Mindrim, and occupy at least an area of 90000 acres.

The remaining part of mountainous districts lies chiefly on the western part of the county, some of which adjoins the county of Durham; but the largest portion extends from the Roman Wall to the river Coquet (with a few intervening inclosed vales) and to the moors north of Rothbury. They are not marked by any striking irregularities of surface, being in general extensive, open, solitary wastes, growing little else but heath, and affording a hard subsistence to the flocks that depasture them.

The lower parts present a more pleasing prospect of inclosed country, extensive farms, scattered villages, populous towns, and busy scenes of trade; principally occasioned by the vast resources of coal, which this county in so many parts abounds with: it is also favoured with other valuable minerals, particularly lead ore, lime, and marl.

Its principal rivers are the Tyne, (whose main branches are the Derwent, and the Reed) Blythe, Wansbeck, Coquet, Aln, Till, and Tweed.

The Tyne and Tweed are most eminent for their navigation; the tide flowing up the former 16 miles, and up the
the

the latter eight miles ; the trade upon the Tyne is immense ; upon the Tweed confined to a few vessels, and those chiefly fishing smacks, employed to carry the salmon, gillie, bull trout, whittlings, &c. to London, of which great quantities are taken in the Tweed, to the amount of 20,000l. worth a year. A rent of 800l. a year is paid for a fishing of 200 yards in length, near the mouth of the river ; and the same rent is paid for other two fishings above the bridge, not more than 250 yards in length each.

The Climate—in regard to temperature, is subject to great variation ; upon the mountains, snow will often continue for several months, (and may frequently be seen there of a considerable depth) when there is none in the lower districts. The weather is very inconstant, but mostly runs in extremes. In the spring months, the cold, piercing easterly winds are most prevalent ; and our longest droughts are always accompanied by them : in some places they have acquired the name of *sea-pines*, from the slow progress vegetation makes, when ever they continue for a few weeks. Rain is of little use while they prevail, from the great cold which always attends them.

The mild western and southern breezes rarely take place before June ; they are certain harbingers of rain and vigorous vegetation ; and are the most prevailing winds through the summer and autumn : in the latter season, they often blow with tempestuous fury ; dash out the corn, and disappoint the just hopes of the industrious farmer.

Our greatest falls of snow, or rain, are from the south, or south east ; and whenever we have a very high *west wind*, it is a certain sign that a great quantity of rain is falling to the westward, in Cumberland and Roxburghshire.

The Soil.—A strong fertile clayey loam occupies the level tract of country along the coast, and reaches as far up in ge-

neral as the great post road. It is well adapted to the culture of wheat, pulse, clover, and grazing.

Sandy, Gravelly, and Dry Loam—Or what is here more generally understood by turnip soil, is found on the banks of the Tyne, from Newburn to Haltwhistle; on the Coquet, about and above Rothbury; on the Aln, from its mouth to Alnwick; and down Tweed side: but the greatest quantity of this kind of soil is found in the vales of Breamish, Till, and Beaumont. The hills surrounding the Cheviot mountains are mostly a dry channelly, sharp pointed, gravelly loam.

Moist Loams—on a wet, cold, clay bottom, occupy a large portion of this county, being unsafe for sheep, and unfit for turnips; they are principally employed in growing grain, rearing young cattle, and feeding ewes and lambs. This soil prevails most in the middle and south east parts of the county.

Black Peat Earth—is the prevailing soil in most of the mountainous districts, and is found in many places through the lower parts of the county.

At many places in Glendale Ward is found (at various depths, sometimes within four inches of the surface) a stratum of hard scoria like substance, which seems inimical to vegetation; for, whenever the roots of vegetables get down to it, they turn sickly; thorns in particular seldom exist above two or three years after their roots penetrate this substance. It is probably a species of lava, which has run down from the adjoining mountains of Cheviot, when in a volcanic state: where it lies at a considerable depth, we often find the most fertile soils.

ESTATES AND THEIR APPENDAGES.

LANDED property in this county is mostly freehold. Estates vary in their annual value from 20 to upwards of 20,000*l.* a year; one in particular is upwards of 40,000*l.* Small estates, from 20 to 200*l.* a year, are found in the southern and middle parts of the county, but very rarely in the northern.

The land is mostly occupied by tenants; in Glendale and Bambro Wards, the farms are large, from 500*l.* to 1500*l.* a year; * very few under 100*l.* In the other parts of the county they are from 50*l.* to 300*l.* a year.

Leases—for twenty-one years, are let on most of the principal estates, especially in the northern parts of the county. Some proprietors of land, in the other districts, let only for nine, twelve, or fifteen years. The general time of entry is the 12th of May.† The covenants vary with circumstances; but we think the following the best calculated for improvement, and the benefit of both landlord and tenant:

After the usual reservations of mines, woods, &c. and provisos of re-entry on—non-payment of rent, or alienation, &c. the tenant covenants to pay the rent—all taxes—keep and leave all in repair—not to sell hay, straw, or other fodder, from off the premises—to lay the dung on the premises, except that bred the last year—not to sow any hemp, flax, mustard, or rape, except the last, for green food—not to depasture more stints the last year, than were depastured for two years preceding—to destroy the moles yearly, and scale the grass grounds—to thresh the waygoing crop in an uniform manner, and deliver a daily supply of straw to the next

B 2

tenant

* There are some tenants in the northern parts of the county, that farm from 2000*l.* to 4000*l.* a year, and upwards.

† Upon the Duke of Northumberland's estate the time of entering is Lady-day, and the offgoing tenant has no waygoing crop.

tenant—to keep uneaten the lands sown with grafs seeds in the last year of the term, from the 1st of October, except one half to be eaten by the offgoing tenant after the 1st of April, to the end of the term—to permit the lessor to sow grafs seeds on the waygoing crop—and to plough the lands intended for fallow five months before the expiration of the term—to have no more in ploughing than * acres at one time—to fallow yearly one-third of the tillage lands, and lay upon every acre fother of lime, where necessary; or, in lieu thereof, fother of dung—not to keep any land in tillage more than three years at one time—to lay to grafs yearly one-third of the tillage lands, and sow upon every acre pounds of clover, &c. or other seeds suited to the soil; to keep such lands in grafs at least two or three years, before they are ploughed out again—to lay down to grafs, or have in grafs the last three years, all those fields called

—to keep in grafs during the whole of the term, and at the end thereof leaving in grafs all those fields called and all such lands as shall be converted into watered meadows—to be at one half the expence of making new quick fences, and of cleaning and rearing them for seven years after first planted—and others, that situation or circumstances may require.

The lessor covenants, that the tenant shall have peaceable possession, and a waygoing crop from off two-thirds of the tillage lands, with the use of the stack-yards, barns, and grainaries, for twelve months after the expiration of the term; also to be at one-half the expence of making all new quick fences, and of cleaning and rearing them for seven years after first planted; with other covenants that may be agreed on, respecting building, &c.

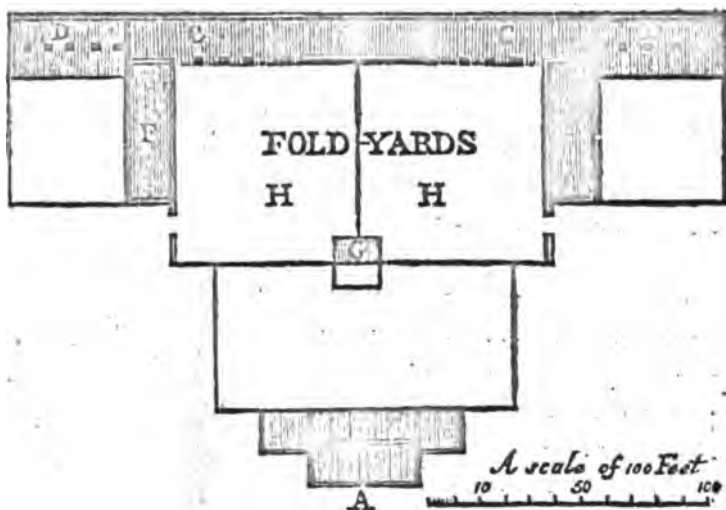
Buildings

* Generally from one-third to near one-half, on the larger farms; but on some small farms it is more, where the clover system is pursued.

Buildings—for the use and convenience of farms were formerly very shabby and ill contrived ; but those that have been erected of late years, are better adapted to the various purposes wanted by extensive farms and improved cultivation.

The most approved form of distributing the various offices, is, on the east, west, and north sides of a rectangular parallelogram, which is generally divided into two fold yards, for cattle of different ages, the south being left open to admit the sun ; and for the same reason, and also for the sake of cleanliness and health, the farm house is removed in front twenty or thirty yards ; between which, and the south wall of the fold, is a small court for coals, young poultry, &c. But as a small plan will shew the disposition of the various offices much better than a verbose description, we shall adopt that mode in the annexed plan.

STACK YARD.



- A. The farm-house.
- B. The barn, 18 feet by 60.
- C. Sheds, over which are granaries.
- D D. Ditto, upon which are built corn-stacks ; one of these are for wintering yearling calves, the other for holding implements of husbandry.
- E. Byers for cows and work-oxen, 16 feet by 48.
- F. Stables.
- G. Fig-flies, with hen-house above.
- H H. Fold yards for cattle of different ages.

The

The materials used for building are, in general, stone. Formerly thatch was the universal covering, but it is now justly exploded, and tiles or slates substituted in its stead. The small dark blue slate, from Scotland, is the kind mostly used here, and are much superior to tiles; for, though they are more expensive at first, yet it is probable, that in a few years they may be as cheap, from the repairs tiles so frequently require, especially where they are so ill manufactured.

Fir timber is universally used for all the purposes of building.

Woods—growing in a natural state are found mostly on the banks of rivers; those of the north and south Tyne, the Wansbeck, Coquet, and their tributary streams, have by far the greatest quantity. Of old oak timber, from eighty to one hundred and forty years growth, there probably is not more than the worth of 60,000*l.* of which two thirds can only be said to be proper for building ships of great burthen.

The demand by the collicries and lead mines for small wood, has induced the proprietors of woods on the Derwent, Tyne, &c. to cut them at an early age. From twenty-five to thirty years growth is the general term for oak, elm, and ash; but birch, willow, and aller, are cut sooner; and hazle for corf-rods once in three or four years.

The price of oak, ash, and elm, is 2*s.* per foot; of birch, aller, &c. for pit props, six feet long, and from four to six inches diameter, 4*d.* each; corf-rods, 6*d.* per hundred. Oak bark last year was sold for 9*l.* per ton. Under this management, and at those prices, an acre in thirty years will produce, on an average, 60*l.* clear of expences; there has been instances of an acre of wood thirty-two years old, selling for 100*l.* and another of sixty years growth, worth 200*l.* per acre; but these were in a particularly favourable situation.

In

In the management of these woods, the general practice is to cut all away together. The system of Anthony Surtees, Esq. of Newbiggen, we think preferable: he takes his away in *patches*; and as the older trees interfere with the younger springs, and where a thriving healthy oak is in a convenient situation, he lets it stand for timber. By this means the young spring is sheltered, and an annual produce of upwards of 100l. is obtained from sixty acres of woodland.

Plantations, on an extensive scale, are rising in every part of the county; and are in almost every instance doing well, and promise not only to repay the spirited exertions of the proprietors, but will add greatly to the ornament and improvement of the country.

LIVE STOCK.

Horses.—THE best draught horses used in this county are brought from Clydesdale, in Scotland; they are in general from 15½ to 16 hands high; strong, hardy, remarkable good and true pullers; a restive horse being rarely found among them.

Those bred in the county are of various sorts, descended from stallions of different kinds, from the full blood racer, to the strong, heavy, rough legged black. From the full blood stallions and country mares, are bred excellent hunters, road and carriage horses;—and from the other kinds of stallions are bred the draught horses, which, in general, are middle sized, active animals, well adapted to the husbandry of the country.

Cattle.—The different kinds of cattle bred in this county are the short horned—the Devonshire—the long horned—the Galloway polls—and the wild cattle.

The

The short horned kind have been long established over the whole county, the other kinds are found only in the hands of a few individuals, who have introduced them with a laudable view of comparing their merits with the established breed of the country.

The Devonshire breed is only in the possession of Walter Trevillyan, Esq. of Nether Witton, who introduced them about three years since; their offspring has not yet got to a proper age to form a judgment of their comparative merits.

Those who have tried the long horns, have generally given them up in favour of the short horns, which have been very much improved of late years, by the exertions and attention of enterprising breeders; who have already improved them so far, as to be sold fat to the butchers at $3\frac{1}{2}$ years old. The weight of the carcass is in general from 60 to 80 stone, (14 lb. to the stone) but there are instances of individuals attaining much greater weight.

Sir H. Grey bred and fed two seven years old oxen that weighed 152 stone, 9 lb. the four quarters only; and a spayed heifer, 132 stone, 6 lb. ditto. Mr. Smith of Togstone, a cow, 127 stone, 11 lb. ditto.

But large size is not now considered as an excellence: quick feeders that lay on their fat upon the most valuable parts, and have the least offal in the coarse parts, are the kind which every enlightened breeder wishes to be possessed of.

The Galloway Polls—have only been tried by one or two farmers. On the edge of the Cheviot hills they have answered very well.

The Wild Cattle—are only found in Chillingham Park, belonging to the Earl of Tankerville, and as it is probable, they are the only remains of the *true and genuine* breed of that species of cattle, we shall be more particular in our description.

Their

Their colour is invariably white, muzzle black ; the whole of the inside of the ear, and about one third of the outside from the tip, downwards, red ; horns white, with black tips, very fine, and bent upwards. Some of the bulls have a thin upright mane, about an inch and an half, or two inches long. The weight of the oxen is from 35 to 45 stone, and the cows from 25 to 35 stone, the four quarters ; 14 lb. to the stone. The beef is finely marbled, and of excellent flavour.

From the nature of their pasture, and the frequent agitation they are put into, by the curiosity of strangers, it is scarce to be expected they should get very fat ; yet the six years old oxen are generally very good beef. From whence it may be fairly supposed, that in proper situations, they would feed well.

At the first appearance of any person they set off in full gallop ; and, at the distance of two or three hundred yards, make a wheel round, and come boldly up again, tossing their heads in a menacing manner. On a sudden they make a full stop, at the distance of forty or fifty yards, looking wildly at the object of their surprize ; but upon the least motion being made, they all again turn round, and gallop off again with equal speed, but not to the same distance : forming a shorter circle, and again returning with a bolder, and more threatening aspect than before, they approach much nearer, probably within thirty yards, when they make another stand, and again gallop off. This they do several times, shortening their distance, and advancing nearer ; till they come within a few yards, when most people think it prudent to leave them, not chusing to provoke them further, as it is probable, that in a few turns more they would make an attack.

The mode of killing them was, perhaps, the only modern remains of the grandeur of ancient hunting. On notice being given, that a wild bull would be killed upon a certain day, the inhabitants of the neighbourhood came mounted,

and armed with guns, &c. sometimes to the amount of an hundred horse, and four or five hundred foot, who stood upon walls or got into trees, while the horsemen rode off the bull from the rest of the herd, until he stood at bay; when a marksman dismounted and shot. At some of these huntings, twenty or thirty shots have been fired before he was subdued. On such occasions, the bleeding victim grew desperately furious, from the smarting of his wounds, and the shouts of savage joy that were echoing from every side: but, from the number of accidents that happened, this dangerous mode has been little practised of late years; the park-keeper alone generally shooting them with a rifled gun, at one shot. When the cows calve, they hide their calves, for a week or ten days, in some sequestered situation, and go and suckle them two or three times a day. If any person come near the calves, they clap their heads close to the ground, and lie like a hare in form, to hide themselves. This is a proof of their native wildness, and is corroborated by the following circumstance, that happened to the writer of this narrative, who found a hidden calf, two days old, very lean, and very weak. On stroking its head, it got up, pawed two or three times like an old bull, bellowed very loud, stepped back a few steps, and bolted at his legs with all its force; it then began to paw again, bellowed, stepped back, and bolted as before: but knowing its intention; and stepping aside, it missed me, fell, and was so very weak, that it could not rise, though it made several efforts. But it had done enough, the whole herd were alarmed, and coming to its rescue, obliged me to retire; for the dams will allow no person to touch their calves, without attacking them with impetuous ferocity.

When any one happens to be wounded, or grown weak and feeble through age or sickness, the rest of the herd set upon it, and gore it to death.

Of Sheep.—In this county there are three distinct breeds:—The Cheviot sheep, the heath sheep, and the long woolled sheep.

The Cheviot Sheep—are hornless, the faces and legs in general white.* *The best breeds* have a fine open countenance, with lively prominent eyes; body long, fore quarters wanting depth in the breast, and breadth both there and on the chine; fine clean small boned legs; thin pelts, weight of carcass when fat, from 12 to 18 lb. per quarter; fleeces from 2½ to 3½ lb. each, and sold in 1792, for 11d. per lb. The wool is not all fine, there being in a fleece of 3 lb. weight, only 2 lb. of fine wool, worth one shilling per lb. (when the whole fleece sells at 10d. per lb.) and one pound of coarse, worth only 6d. per lb.

They are bred only upon the hilly districts in the north-west part of the county, and do not extend much farther south than Reedwater.

The *best kind* of these sheep are certainly a very hardy and valuable mountain sheep, where the *pasture is mostly green sward*, or contains a large portion of that kind of herbage; which is the case with all the hills around Cheviot, where these sheep are bred; for as to the mountain of Cheviot itself, no kind of sheep whatever are bred upon it; and we find it an universal practice, amongst the most experienced sheep farmers, to depasture the *heathy districts* with old sheep, (gimmers and wethers) but they never attempt to keep a breeding flock upon them.

C 2

Blind-

* Many of the Cheviot sheep have dark faces, and were more so formerly. We were informed by Mr. Chisholm, Mr. Readhead, Mr. Marshall, &c. that these dark faced ones grew equally as fine wool, were as hardy, and equally as good thrivers as the white faced ones; but that the people to whom they sold their sheep, and especially rups, preferred white faces; for which reason, they have endeavoured to get quit of black faces.

Blindburn is probably the highest and coarsest pasture in this county where this kind of sheep are bred. We examined the herbage, and found, that the ewe-pasture had a considerable portion of green sward, the coarsest parts of which consisted of *nardus stricta*, (wire bent *); *juncus squarrosus*, (stool bent); *scirpus caespitosus*, (ling †); *eriphorum vaginatum*, ‡ (moss); with patches of *erica vulgaris*, (heath or hadder).

The shape of this breed of sheep has been much improved of late years; but all those who have been aiding in making these improvements, readily acknowledge, there is still much to do; especially to the fore-quarter, which they all agree is very defective; but we hope it will not long remain so, as we think we see a spirit of investigation arising amongst these breeders, that in a few years will remedy not only this defect, but will discover others, which at present they are not willing to admit. But as knowledge is progressive, we cannot expect the perfection of this breed of sheep can be obtained at once; it must proceed by slow gradations, as every other improvement hath done; it is a great point gained, that we admit defects, and are desirous to amend them.

That breed of sheep which brings the most profit to the farmer, will always be pursued by him, whatever his situation;

* The English names inserted after the Latin ones, are such as the Cheviot shepherds know them by.

† In the county of Durham, Yorkshire, and some other parts, *erica vulgaris* is known by the name of *ling*.

‡ This plant grows in wet mossy places; it generally springs in February and March. The sheep are remarkably fond of it, not only the leaves, but the roots; and will scratch away the mossy soil six or eight inches deep, to obtain it. We have seen them working up to the eyes for this purpose. The shepherds tell wonderful tales of the nutritive powers of this plant; asserting, that sheep reduced by hunger, will recover faster, and thrive much better upon this plant, than turnips. It is certainly a valuable plant for three or four weeks; but after it has flowered, the sheep totally neglect it.

tion; but that object, we presume, is not to be obtained in this district from *fine wool alone*. Perfect mountain sheep should be *hardy, well formed, and quick feeders*. These qualities will always recommend them to the grazier, who will never purchase a slow feeding animal, while he can get one of a different sort, though at a considerable advanced price. But if to these qualities, so essential to the sale of a mountain farmer's stock, can be added a *fleece of fine wool*, a breed of sheep would then be obtained, the properest for a hilly district of any we have yet seen. There is little doubt but this may be accomplished by *proper selection*; and probably the *best kind* of Cheviot sheep, from their hardiness, and producing a portion of fine wool, are the properest stock for laying the foundation of so desirable an improvement.

Mr. Robson, of Belford, (now of Chatto) says, he improved the shape of his sheep very considerably; particularly the fore-quarter, and the wool, in having less buttocks; by using three rams which he purchased in Lincolnshire, thirty-three years since; and we know other instances of improvement, by using tups of $\frac{1}{2}$ or $\frac{3}{4}$ Dishley blood. In all these cases, we do not find the sheep less hardy, or wool of less value; but the carcass materially improved.

Mr. Readhead, of Chatto, is of opinion, that there are many situations amongst the Cheviot hills, where the South Down sheep would do very well. We readily join him in the idea, and hope, those who are possessed of such situations, will not be long of making a *fair* experiment; should it succeed, a very great improvement of the Cheviot wool, in point of fineness, might be derived by crossing with this breed: but probably what it gained in fineness, it would lose in weight, for it is not the value per *pound* which constitutes the farmer's profit, but the value *per fleece*; or rather, that breed is *the best*, that brings the *most profit in fleece and carcass jointly*, from the same ground, in equal times. Opinions and conjectures

conjectures will never decide this matter, it can only be done by *fair* experiments, conducted by persons of judgment and impartiality.

The Mode of Management—amongst the sheep farmers of these hills, is to divide their flock into different parcels, viz. lambs, hogs, gimmers, ewes, and wethers, and each parcel kept on such pasturage as is thought to be most proper for them. Every parcel is attended by a shepherd, who is bound to return the number of sheep delivered to him, either alive, or in his account of dead sheep, which are in general sold at different prices, according to their goodness.

The Heath Sheep—have large spiral horns, black faces and legs, a fierce wild looking eye, and short firm carcasses (weighing from 12 to 16 lb. per quarter) covered with long, open, coarse shaggy wool. The fleeces weigh from three to four pound each; and sold, in 1792, for sixpence per pound. They are an exceedingly active and hardy race, and seem the best adapted, of all others, to high exposed *heathy* districts; such as we find them in possession of here, from the western parts of the county of Durham, to North Tynes.

Mr. Hopper, of Blackhedley, depastures this kind of sheep upon a *heathy moor* of 4000 acres; *from whence* he takes them at 3 $\frac{1}{2}$ years old to turnips; and sells, the May following, from 28 to 32 shillings each: he has tried the Cheviot sheep in the same manner, but thinks the other a hardier and better feeding sheep.

The lower districts of this county were formerly occupied by a variety of *long wooled sheep*, which were called *Muggs*, probably from their faces being covered with a muff of wool, close to their eyes. These being a slow feeding tribe, have given way to the Dishley breed, which were first introduced
into

into this county in the year 1766,* and by their superior merit have so far made their way against every prejudice and opposition, that it is probable, in a few years there will be a difficulty in finding a flock that is not more or less related to the Dishley blood.

The improved Breed of long wooled Sheep—are distinguished from other long wooled kinds by their fine lively eyes, clean heads, straight broad flat backs, round barrel-like bodies, very fine small bones, thin pelts; and that singular property of making fat at an early age, perhaps more than any thing else, gives them a superiority over the other breeds in this island.

The weight of the carcass in general is, ewes three or four years old, from 18 to 26 lb. per quarter; wethers two years old, from 20 to 30 lb. per quarter; the wool upon an average, 7½ lb. a fleece; the length from 6 to 14 inches; sold in 1792. at 10d. per lb.

The most approved mode of management of this breed of sheep is as follows: The ewes generally lamb in March, when we give them a few turnips to increase their milk. The latter end of June or beginning of July the lambs are weaned, and sent to middling pasture; but a good pasture would certainly be a more eligible practice. The ewes are milked two or three times to ease their udders, and such as are not intended to be continued for breeding, are culled or draughted out, and put to clover: when this fails, they get turnips, and are sold about Christmas to the butchers, very fat; the price from 34 to 40s. each; frequently measuring four or five inches thick of fat on the sides, and two or three inches down the back, all the way from head to tail. And though this breed are not eminent for much tallow, yet ewes under such circumstances have been known to produce from eighteen to twenty-four pounds of tallow each.

The lambs, after being weaned, take the name of Hogs. They are generally put to turnips the beginning of November, and continue at them till the middle of April or beginning

* By Messrs. Culley, of Fenton.

beginning of May; when the wether hogs are put upon good pasture, or second year's clover. The second winter they have turnips until the clovers are sufficiently grown to receive them; which is generally about the middle of April: they are clipped or shorn about the middle of May, when we begin to sell them, and are mostly all sold by the middle or end of June. Morpeth is our best market, where the two shear wethers have been sold for the last three years, from forty to fifty shillings a head. At this age they are equally fat as the ewes before described.

We generally reckon one third of the ewes to have twin lambs. They are put to the tup, so as to have lambs at two years old, and kept for breeding until three or four years old, except such as are of particular good forms, or have other valuable properties. These we keep as long as ever they will breed. Such as are defective in shape, suspected of being slow feeders, or other unprofitable qualities, we never put to the tup, or attempt to breed from them.

Salving—was formerly universally practised, and it was thought the sheep could not do well without it. In the lower districts it is now almost totally disused; and most of the hill farmers have laid it aside, and find their flocks do equally well as before; and the wool sells for a much better price than when it is salved; but it is of less weight, as may be naturally expected, from the want of half a pound of salve upon each fleece.

Milking.—It used to be a general practice through all this county to milk ewes after the lambs were weaned, for six, eight, or ten weeks; from this milk great quantities of cheese were made and sold, for about 3d. per pound, when kept to three or four years old. It is exceedingly pungent, and on that account some people prefer it to cheese of a much better quality.

To milk ewes for two or three days after the lambs are weaned is a useful practice; but when continued to eight or
ten

ten weeks, it becomes very detrimental, keeps the ewes lean, and ill prepared for meeting the severities of winter.

This custom has been long disused by the intelligent farmers in the lower districts; and we were glad to find it much laid aside by the most considerable hill farmers. The profits of milking ewes for six or eight weeks is estimated at 8d. per ewe; and it is generally agreed they are decreased in value, at least 1s. 6d. per head; of course there is a loss of about 1s. per head by milking. In one instance of milking long-wooled ewes, last summer, there was a loss of at least 3s. per head.

Swine.—The *Berkshire pigs*, and the large *white breed*, were formerly the most prevalent in this county; but the small *black Chinese breed* has in a great measure supplanted them, especially upon the large farms; and these are likely to give way to a small white breed lately introduced, remarkably quiet, inoffensive animals; on which account they are principally preferred to the Chinese breed.

Goats—are kept in small numbers, on many parts of the Cheviot hills, not so much as an object of profit—but the shepherds assert, the sheep flocks are healthier where a few goats depasture. This probably may be the case, as it is well known, that goats eat some plants with impunity, that are deadly poison to other kinds of domestic animals.

The chief profit made of these goats, is from their milk being sold to invalids, who come to Wooller in the summer season.

Rabbits—are found in considerable numbers among the sand hills along the coast, and are probably the most eligible stock for such situations.

FARMS, AND THEIR MANAGEMENT.

IN the lower districts of this county are found a few farms applied to grazing only ; but the greatest part are employed in a mixture of arable and grafs.

The grafs land is applied to the various purposes of grazing, dairying, breeding young cattle, and, in some places, in breeding sheep.

Grazing.---Oxen are mostly grazed in the eastern part of the county, and a few in the vicinity of Whittingham ; they are bought in May or June, and sold as they become ready, to supply the large fleets of colliers and other trading vessels belonging to Newcastle, Shields, Sunderland, Hartley, and Blythe.

Some few graziers buy only such oxen as are forward, by having got turnips in the spring : these generally go off in June, and are followed by cows, heifers, or kyloes ; of which, those that do not get fat on the pastures, to be sold through the summer, are put upon fogs (aftermoths) and sold in November and December. The cows are also bought in the spring months, and are chiefly used for home consumption.

The kyloes are bought at Falkirk Tryfts (meetings) or at Newcastle Fair, in the autumn, and wintered upon coarse or rough ground or straw : sometimes a few turnips are given in the spring, and are sold all through summer, as they become fit for the butcher, to supply Newcastle and other markets. Those that are ready to go off in June, always leave the most profit ; beef being frequently sold at that season for a shilling a stone more than the ordinary prices.

The

The profit of grazing, like all other speculations, varies with circumstances ; but we believe we may venture to average it at 3l. or 3l. 10s. for keeping on grass from May-day to Michaelmas. Cows, in general, leave more than oxen, in proportion to their weight ; but they are subject to disorders of the udder, that frequently reduce the profit very much, and deter many people from grazing them.

Some few graziers, who feed oxen only, follow the old custom of keeping no other kind of stock in the same pasture ; whilst others, we think with more propriety, mix a few sheep, and two or three colts, in each pasture ; which both turn to good account, and do little injury to the grazing cattle. In some cases sheep are a real benefit, by eating down and destroying the *Senecio Jacobaea* (Ragwort) which disgraces some of the best pastures in the county, where oxen only are grazed.

Sheep.---The practice of fattening sheep by those who breed them, hath been before described ; a large portion of this county being liable to the rot, and unsafe for a breeding flock, on such lands. Ewes for fat lambs are ventured for one year ; these are bought in the autumn, put to tup early, (some in August) the lambs sold in May, June, and July ; after which the ewes are fattened, and sold in October and November.

Such lambs as are early, and go off in May, often sell for 20s. each ; but the others average at about 12s. 6d. The price of fat ewes depends much on their being of a good or slow feeding sort, and will vary from 24s. to 30s. The average may be called 27s. The proceeds from long-wooled ewes will be,

D-2

A fat

	£	s.	d.
A fat lamb	0	12	6
Ditto ewe	1	7	0
Fleece	0	4	6

Deduct prime cost: £ 2 4 0
1 0 0

Profits on ewe and lamb for one year £ 1 4 0

The profits of those that have lambs, sold at 20s. will be 1l. 12s.

The Cheviot ewes are generally put to a large long-wooled tup, which increases the size of the lambs. The proceeds are,

	£	s.	d.
A fat lamb	0	9	0
Ditto ewe	0	14	0
Fleece	0	2	0

(Deduct prime cost of ewe £ 1 5 0
0 13 0

Profit for one year £ 0 12 0

Upon some particular farms in the middle parts of the county, they feed Cheviot wethers; they are bought in the autumn for 14 or 15s. each, and after keeping about twelve months on grass, leave a profit of from 10 to 12s. each.

Dairy.---This county cannot boast of its dairies; those who live in the vicinity of Newcastle, and other populous places,

places, make a handsome return by the sale of milk, fresh butter, &c. but upon most large farms in this county, dairies are not held in much estimation.

Breeding young Cattle---is practised in almost every part of this county. Upon the large farms cows are kept more for this purpose than the profit of dairying. There are instances of 50 or 60 calves being brought up, in one season, by one farmer, who did not milk more than fifteen cows; calves are certainly best reared with milk. But where such numbers are reared, many different things have been mixed with, or substituted for, this nutritive and natural diet. Oats and bean meal, oil cake, lintseed, boiled turnips, &c. are used, and have their various advocates; but lintseed is most approved. Eggs are excellent for mixing in the calf's food, when cheap in the spring; perhaps they cannot be better employed. In the summer the calves are turned to grass, and in the first winter get turnips and straw. After being a year old, they are kept in summer on coarse pasture; and in winter on straw only.

Breeding Sheep---to be sold to graziers to fatten, is practised by the occupiers of such farms as do not afford a sufficiency of turnips, or such as do not produce any: those who are in the latter predicament, either take turnips for wintering their hogs, or put them upon good old grass pastures. The wethers are generally sold in September and October, being then shearlings, for, from 22s. to 26s. each; and the ewes, three and a half years old, from 18s. to 22s. each.

Tillage---A few years since, the ploughing, and various other purposes, for which draughts are wanted upon a farm, were performed by horses; oxen being only used by a few individuals. But since the great advance in the price of horses, oxen:

oxen are become more general, especially for the purposes of ploughing and carting *about home*. They are harnessed both with yokes and collars. Where four are used, a boy is allowed to drive; when two, the man that holds the plough drives with cords. They only plough half a day at a time; each ploughman having four oxen, a pair of which he uses in the forenoon, and the other in the afternoon. Their food in winter is straw, and a few turnips, in the summer grass.

Horses are always yoked double, and driven with cords by the ploughman, and in general plough an acre a day; but in the season of sowing turnips, one and a half, or even two acres, are frequently ploughed, on fine light soils.

A pair of tolerable draught horses cannot now be bought under 40*l*. At the high price oats have been for the last two years, the expence of keeping is very great: most farmers allow four bushels of oats per week to two horses, in the busy months of the spring; and turnip seed time, they get more. But then, in the summer season, their quantity is reduced, so that upon the whole, two horses consume about 200 bushels of oats in a year, which, at 2*s*. per bushels, is 20*l* a year, for corn only, for a two horse draught.

The Ridges—are of various forms and sizes. On the deep-soiled lands that were used as arable, some centuries since, the ridges are mostly very high, broad, and crooked; upon such lands as have been recently brought into cultivation they are straight, nearly flat, and in general about twelve or fifteen feet broad; on dry lands they are quite flat, and alternately gathered and split. A breadth of fifteen feet answers best for sowing broad-cast at two casts.

Fallows—are generally ploughed before winter, to meliorate by the frost. In the middle of April, or beginning of May, those that are intended for turnips, or potatoes, are
harrowed

harrowed and ploughed across; and the same operations repeated two or three times, or until it is *sufficiently fine* for sowing. The lime is laid on generally before the last ploughing. There are some who lay the lime upon the stubble the autumn before; but we prefer the mode of laying on the lime, when the land is in the *most* pulverized state. Fallows for wheat generally receive four ploughings through the summer, but are seldom harrowed, it being thought an advantage to the wheat to have the land cloddy.

For barley, it is the general custom to plough only once; but the best cultivators seldom sow this grain without giving three ploughings; especially when the land is to be sown with clover and grass seeds.

Every other species of grain is generally sown after one ploughing.

Rotation of Crops.—In some parts of this county, the barbarous system of taking three white crops betwixt fallow and fallow, is still to be found. The most prevailing system is, fallow; wheat; oats; fallow, &c. repeated for two, three, or four fallowings. Upon the strong lands along the sea coast, instead of oats after wheat, they generally substitute pease or beans, or beans and pease mixed: when laid down to grass, it is sown with grass seeds, and continues in grass seven, or more years.

On dry soils, the usual rotation is, after ploughing out from grass, oats; oats; turnips; barley or wheat sown up with clovers and ray-grass, and continued in grass from four to seven, or more years.

The best cultivators use the following rotations, according to soil, situation, and circumstances:

On strong clayey soils: oats; fallow; wheat; clover; wheat; fallow. Strong loams: oats; turnips; barley; clover; wheat; beans; oats. Dry soils: oats; turnips; barley;

barley; clover; or pease drilled; wheat; oats; and oats; turnips; barley, or wheat; and clover or grafs seeds, for two, three, or more years, * depastured with sheep.

This rotation has been introduced of late years, and is becoming more general, not only upon the turnip soils, but upon the strong lands; substituting clean fallows instead of turnips; and those that have tried it, find, that after two or three years clover and grafs seeds, the land will grow good crops of oats, which they could never get it to do under their old system.

Wheat.—The greatest quantity of this kind of grain raised in this county, is after summer fallows; it is generally sown in October. Of late years a good deal has been grown after turnips: this is sown all through the winter, and as late in the spring as the beginning of March; it is also grown after clover, beans, pease, tares, potatoes, and sometimes after early oats.

The quantity sown is from two to two bushels and a half per acres, broad-cast,† according to times of sowing, nature, and condition of the land, &c. The quantity reaped is from twenty to thirty bushels per acre; in some cases as high as forty.

The seed is generally pickled, by steeping in chamberley, and powdered with quick-lime: the smut is seldom or never seen, where this practice is followed.

The varieties of wheat grown here are very numerous; the principal are, Zealand, golden ear, white Kent, little wheat, or velvet ear, wooley eared, &c. but of late red wheat has been much used, especially upon new or crude soils, with great success.

Rye

* Upon weak thin soils, that leave little profit in corn, it is best to continue them in grafs, for five, six, or seven years; or so long as they will pay, by depasturing with sheep or young cattle.

† Upon Wark farm, and a few others in Glendale, drilling both barley and wheat, and hoeing them, has been found an excellent practice for destroying annual weeds.

Rye—was formerly the principal grain grown upon all the dry, sandy, and light soils; but since the introduction of turnips, and artificial grasses, it is rarely cultivated, except upon *very sandy* soils: it is sown after turnips, or clover, all through the winter, two bushels and a half per acre; and produce from twenty to thirty.

Barley—is generally sown after turnips, from the middle of April to the latter end of May. The quantity sown is from two to two bushels and a half per acre; the produce from thirty to fifty. The common barley is the variety most generally cultivated, being early, productive, and better liked by the maltsters. Battle-door, or sprat barley, is grown by a few; and also a variety of long-eared barley, whose awns mostly drop, or are easily shaken off when ripe, from the grain being shorter, plumper, and rounder bodied, than the common sort. It is preferred by the millers for making into pearl barley. It ripens later than the common sort, by near a fortnight.

Oats—are universally grown throughout every part of the county; they are sown after every species of grain, as well as grass or clover lea. The crops are most productive upon fresh land. Old worn-out tillage, and strong clay land, are improper for the culture of this grain. The varieties usually cultivated are,

1st. *Poland Oat*—a variety of which, called *Church's oat*, from the name of the person * who first introduced them, are now in high estimation, and are the best early oat yet known for sowing upon loamy lands in good condition; they are early, very productive, and much liked by the millers, who give two pence per bushel more for them than the common oat. This variety is known by the grains being remarkably

* Mr. Church first had them from Mr. James Robson, apprentice of Messrs. Culley, who brought them out of Scotland, and gave Mr. Church a handful; those he brought to Fenton were lost.

ably short, large, plump, round, and well filled, and not in the least tailed : a bushel generally weighs 48 lb.

2d. *The Dutch, Freezeland, or Holland Oat* *—were almost the only species of early oats grown here, before the introduction of the Church oat ; they are now only grown upon dry, light lands, to which they are better adapted than the Poland oat.

3d. *Peebles Oat*. †—A variety of common oat, but much earlier, has been lately introduced from Peebles-shire, in Scotland ; it is a very proper oat for hilly districts, not only for its earliness, but in not being easily shaken by the wind : the grains are the smallest of any other oat we know ; but from the very thin skin, it meals well, and is well liked by the millers.

4th. *Common Oat* ‡—is grown upon all such lands as are not thought in sufficient condition for the Poland or Dutch kind.

5th. *Angus Oat*.—A variety of common oat has been introduced of late years from Angusshire ; it is a better bodied grain than the common oat ; produces more straw, and answers very well in early situations. But its being later in ripening than the common oat, will militate against its general adoption, in a country where early harvests are so desirable. This oat answers beyond every other, in poor, dry, hungry, rabbit-warren soils, from its throwing up so much more straw than any other kind ; and in these soils ripens early enough.

In

* Were not known here before 1768, when they were introduced by Messrs. Culley.

† In some places it is called the Red Oat, probably from its being not so fair as the common oat ; but it is very different from the red oat grown in the midland counties, and ought not to be called by the same name : for this reason we call it Peebles Oat.

‡ The best seed of this kind of oat is got from Blainsley, in Scotland.

In point of earliness, they succeed each other, as classed above; the Angus oat being at least three or four weeks later than the Poland and Dutch.

The quantity sown in general, is seven or eight bushels per acre of the Poland, and six of the Dutch oats: these quantities are necessary, as they do not tiller much; but for the other kinds, we think four or five bushels sufficient. The time of sowing, March or April. The produce of common oats is from twenty to forty bushels per acre; of the Poland and Dutch, from forty to sixty. There are some instances of seventy or eighty bushels per acre, but these were generally attended with some favourable circumstances.

Beans—have, time immemorial, been a prevailing crop upon all the strong lands in the county, especially along the coast to the southward: they generally succeed wheat; are sown broad-cast, two bushels and a half per acre, and never hoed. In *this district*, whose soil is so well adapted to the growth of beans, it is surprising, that drilling them should be totally neglected, and that this beneficial mode of culture for both beans and pease should be confined to a few farmers in Glendale Ward, and near Tweed mouth. With these few they were drilled at twenty-seven inches distance; ploughed between, and hand-hoed; the crops good, and the wheat that succeeded equal to that upon the summer fallows adjoining. A great objection to the culture of beans here, is their lateness of ripening: the produce uncertain; twenty bushels are a fair average crop.

Pease—were formerly a more general crop than at present; they are mostly grown upon such lands as have been worn out by running too long in tillage. The early, and late grey pea, are the only kinds cultivated here; the latter is usually sown in February or March, and the former in April: three bushels is the quantity sown per acre, broad-cast; and the

quantity reaped depends very much on seasons; no grain being so uncertain a crop as pease. A good crop is reckoned at twenty-five to thirty bushels per acre.

Spring Tares—are grown principally for culling, as green food for horses, to supply the vacancy between the first and second cutting of red clover, used for the same purpose and for the same intention.

Winter Tares—have been lately introduced, and promise to answer well; both kinds are grown upon the fallow lands, intended for wheat or late turnips. The winter tares are sown in September, and the other in March.

The Harvest—in the vale of Till, and upon Tyne side, near Hexham, frequently begins the first week in August: while upon the cold backward soils and situations, oats will be often uncut the latter end of October, or beginning of November: but the most general harvest is in September. Most of the corn is cut with sickles, by women; seven of whom, with a man to bind after them, generally reap an acre per day. Oats and barley are sometimes mown by a few individuals.

Wheat is set up in stooks of twelve sheaves each; oats and barley are *gated*, or set up in single sheaves; and when dry, bound tight at the bottom, and led home, or set up in stooks of ten sheaves each. The stacks are mostly round; but some of the best farmers set up their barley and wheat in long narrow stacks, which keeps the corn much better and dryer.

Turnips—have not been grown in this county, as food for supporting cattle and sheep, much above forty years. For this purpose they were first grown in the northern parts of the county; it is but of late years they have been cultivated on part of Tyne side—a large portion of excellent turnip soil
on

on the banks of this river, from Chollerford to Haltwhistle yet remain to be benefited by the culture of this valuable root.

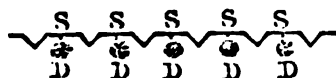
At their first introduction they were sown broad-cast, and hoed by gardeners and other men, at extravagant wages. The late ingenious Mr. Ilderton, about twenty-four years since, had the merit of first reducing the price of hoeing, by teaching boys, girls, and women, to perform the work equally as well, if not better, than men. The mode he took was simple and ingenious: By a light plough, without a mould board, he divided the field into small squares of equal magnitude, and directed the boys and girls to leave a certain number of plants in each square. In a short time they became accurate, regular, and expert hoers; and in a few years all the turnips of the country were hoed by women and boys, at half the expence, and better than by men.

The present mode of drilling turnips was first introduced into this county about ten years since; the advantages with which it is attended, has so far recommended the practice, that very few are now sown broad-cast; and as we think it is an operation that may be serviceable in another district, we shall be more particular in describing the manner of performing it.

The land being made fine, prepared, &c. as in the broad-cast method, the ploughman draws his first furrow as straight as possible. In returning he keeps his far side horse in the new made furrow, and his plough at such a distance as to form a one-bout ridge like an Λ ; by proceeding in this manner, the land, when finished, will appear thus: $\Lambda\Lambda\Lambda\Lambda\Lambda\Lambda\Lambda\Lambda$. The distance of these little ridges is from twenty-seven to thirty inches. A less distance does not admit of ploughing between the drills.

The next operation is spreading the dung; which is performed by a cart going down every third or fifth furrow, and laying the dung in small heaps; women and boys follow with small three-pronged forks, and spread it evenly in the bottom
of

of three or five furrows, that is, the one where the dung is dropped from the cart, and those on each side of it: this done, the ploughman splits the one-hout ridges before raised, and covers up the dung exactly in the middle; but before the seed can be sown, these last formed one-hout ridges require to be flattened at the top, by a small roller that flattens two ridges at once. Upon the top, and exactly in the middle of these flattened ridges, the seed is deposited by one or two drill machines, tied to the roller by a rope six or seven feet long; at which distance they follow the roller, each machine being guided by a man. When finished, the work appears in this form:



Where S represents the seeds, and D the dung directly under it, which is wholly employed in promoting the vegetation of the turnips.

The roller is drawn by one horse, driven by a boy. Setting up the ridges, and covering in the dung, is performed by a common swing plough. The quantity of seed sown, about one pound per acre; it being better to have an abundance of plants, for fear of accidents. The quantity of dung used is from fifteen to twenty-five two-horse cart-loads per acre.

When the plants have got four leaves, we begin to hoe and as they have so much room sideways, we leave them only eight or nine inches distance from one another in the rows or drills. The hoers go sideways, and pull the surplus plants, weeds, &c. into the hollow intervals between drill and drill, and the turnips are left as regular as if they were planted. This work is performed by women and children, with the greatest care and exactness, at the expence of four shillings per acre.

As soon as the plants are recovered, which will be in eight or ten days, a small plough (five inches wide at the bottom, behind,

behind, and eleven inches at top) drawn by one horse, takes the earth from the turnip rows, and with the foil covers the weeds, &c. which the hoers had pulled into the hollow intervals between the drills. A second hoeing takes place, when the plants are strong enough, and otherwise necessary; and a few days after, the foil or earth before ploughed from the turnip rows, into the hollow intervals, is now equally divided and laid up to each drill or ridge again, by the same small plough, and one horse. This finishes the business, unless the land has been very wild and out of condition, and requires more hoeing and ploughing between the drills.

If the drills are made in the same directions of the ridges, at the next ploughing for corn, the surface will be irregular, and the dung unequally distributed. To avoid this, on dry level lands, the drills are made diagonally across the field; but where the ridges are high, it is best to make the drills *directly across* the ridges, and draw a plough down the furrows to take off the water.

It is generally supposed, that a weightier crop is produced by the drill than the broad-cast method;* but even admitting them equal in this respect, the superiority, as a fallow crop, must be allowed to the drill; for the repeated ploughings in the intervals, and hand-hoings in the rows, effectually extirpate the whole race of annual weeds; and so much surface being exposed through the winter, makes a higher preparation for any succeeding crop. Another advantage is, the facility with which they are hoed, as a boy or girl, nine or ten years old, can hoe them with the greatest ease, and generally better, than experienced broad-cast hoers, who are apt to take too many plants away; while the young ones, from the apprehension of making them too thin, will leave them at any distance you shew them.

* Turnips drilled in this manner, were sold in 1793, for 8l. an acre, a much higher price than was given for any sown broad-cast.

Ruta Baga---has been tried by a few ; but not so long as is necessary to draw any positive conclusions respecting its comparative merits. With us it is not near so valuable as the common turnip. Hares are remarkably fond of it, and will not touch the other turnips while there is one of these in the field.

Rape---is seldom grown for seed, and perhaps not so often for sheep as it ought, on lands improper for turnips. Upon lands that have grown early oats, and are intended for fallow next year, it is sometimes sown in September, as spring feed for sheep, to supply the vacancy between turnips and clover. For this purpose a little rye is sown along with it.

Cabbages---were cultivated, but gave way again to turnips, it being thought that the latter answer as good a purpose, and are obtained with less trouble.

Potatoes---are generally cultivated in drills, from 32 to 36 inches distance ; whole potatoes are seldom or never used for sets, but cut into pieces, containing one or two sprouts or eyes. These are planted about 12 inches distance, in the bottom of the drill, the dung laid upon them, and the soil turned upon the whole, by the plough splitting the one-hout ridges. They are kept clean by hand-hoeing, and ploughing between the drills ; and as the stems advance in height, they are earthed up by a common or double mould board plough, with which implements they are frequently taken up, by splitting the drills in which they grow, and the roots gathered by women and children.

They are seldom grown for the use of stock, except (by a few individuals) for horses, to which they give them raw, after the rate of two pecks per day each horse, and find them very useful in the spring, (when the straw and hay become dry) and
are

are good for preventing grease or other disorders, by keeping the horses cool and open.

Carrots---have been frequently tried by individuals; but have hitherto made little or no progress, probably from the vast trouble attending their cultivation compared with potatoes, which in some measure answer the same intention as food for horses.

The Artificial Grasses---most commonly cultivated in this county, are, red clover (*trifolium pratense*), white clover (*trifolium repens*), and ray-grass (*lolium perenne*): with these some people mix rib-grass (*plantago lanceolata*), and upon sandy soils, yellow trefoil (*medicago lupulina*) is sown with success. Few of these grasses are ever grown alone, except red clover, when intended to continue only one year; and even then, a small portion of ray grass (from one to three gallons) is generally sown with it, we think with much propriety, as it not only comes early in the spring, but thickens the crop, and facilitates the making the clover into hay.

But when land is intended to continue for three or more years in grass, they are generally mixed in the proportion of

Eight pounds of red clover,

Four ditto of white ditto,

and One bushel of ray grass.

To the above quantities are sometimes added two or three pounds of rib grass, or yellow trefoil, as the soil suits.

When the red clover is grown alone, 10 or 12 pounds an acre are sown upon dry friable soils, and from 14 to 16 pounds upon strong worn out clays.

They are sown in March, April, and May, upon lands fallowed the summer preceding for wheat or turnips, succeeded by barley, and ought always to be harrowed in as well as rolled. Harrowing is particularly necessary upon strong lands growing

F

wheat;

wheat ; and across the ridges is the best mode of performing the operation.

The practice of keeping horses in the house, sheds, or fold yards, all summer, upon cut clover, tares, &c. was introduced into this county about 20 years since ; it is now generally adopted by the best farmers, who find their horses thrive better ; are cheaper kept than depasturing at large ; and also, that a great quantity of manure is gained by this means, which otherwise would have been in a great measure lost, or of very little use ; as the dung of horses, when dropped in the pastures, is mostly destroyed by insects, in the summer season.

Upon the best soils the clover and ray grass mixed, are generally ready to depasture with fat sheep by the middle of April, and from May, through the summer, will carry six, eight, or ten sheep per acre, according to the goodness of the seeds and ground. These pastures are frequently mown, when the ray grass begins to flower, which not only increases the bottom grass, but a quantity of excellent hay is obtained, of considerable value.

Common Hay Seeds---are sown in the southern and south-east parts of the county, from eight to twelve bushels per acre. We have already given our opinion of such rubbish, and shewn the little probability of any good to be expected from thence ; indeed the large quantity sown, is a sufficient proof of the very small number of vegetative seeds they contain ; and it often happens, that those few are of the very worst kinds.

Watered Meadows---were first introduced into this county by Messrs. Culleys, about 26 years since ; and notwithstanding the manifest advantages of this operation, yet so slow is knowledge in making its way, that it was near 20 years before any other person ventured to pursue the practice, and
profit

profit by the example that had been so laudably set them : it is now beginning to spread in the neighbourhood,* and we hope in a few years will be adopted in every situation that can derive benefit from it.

Sir William Loraine, with a spirit that marks his wish for improvement, brought two men from Leicestershire, to drain his grounds at Kirkharl. This business they seem to have understood and executed well ; but we think they have misled the worthy Baronet, in telling him they understood laying out land for watering. We were sorry to see a first attempt executed in so bad a style, which many tend more to discourage the practice, than forward its introduction.

Draining—is one of those improvements that has lately made its way into Northumberland, and is now mostly practised in the middle and northern parts of the county ; the theory is pretty well understood in those districts, and the practice is becoming more prevalent every year. Hollow drains are generally used, filled with stones, where they can be got ; where these cannot be obtained, (but at a great expence) sod drains are the only resource, especially in the northern parts, where there is so little wood.

MANURES.

IN some parts of this county, where the turnip culture is carried to such extent, every exertion of ingenuity is practised to raise a large portion of *Farm Yard Dung* ; for without this

F 2

valuable

* Mr. William Atkinson of Jevering, began about six years since, and Mr. Johnson of Turvilands, last year, and has this year prepared near 30 acres, and purposes doing much more, being well situated for the operation.

valuable article, it is well known that good turnip crops are not to be expected, and the farmers of strong soils are sufficiently sensible of the advantage of dung to their crops, not to use every endeavour to increase its quantity.

The farmers of turnip soils, in order to have their dung sufficiently rotted, lead it out of the fold yard in the winter, make it up in large long dunghills, in order to increase the putrefactive process, and prepare it for that state of dissolution, by which its component parts are ready to be assimilated into new bodies; and in which state only it can be of use in vegetation.

Lime—is found in many parts of this county, of an excellent quality. In Bambro' Ward, where it has been long used, many intelligent farmers begin to doubt of its efficacy, and the propriety of continuing to lay it upon their *old tillage lands*. Upon the dry soils in Glendale Ward, where it has not been used much above 40 years, its effects are more conspicuous, especially upon such lands as have been seldom or never limed. In its natural state, the soil of this district is dry, duffy, light, full of fibrous roots, and when in fallow, on passing over it, you sink to the ancles. After being sufficiently limed, the fibrous roots disappear, the soil becomes denser, firm to the tread, retentive of moisture, and produces better and more abundant crops of grain than before. When laid to grass, the effects of the lime appear to an inch, by the superior verdure which takes places as far as it has gone. Many of these dry soils, after being limed, grow white clover naturally; where not limed, it seldom appears; but they cover totally with *agrestis capillaris* (f. c. bent), which is never ate by any kind of stock, if they can get any other food. When land has been sufficiently limed, this plant disappears; and whenever it is found, it may be safely concluded, that the soil on which it grows has not had its due quantity of lime.

Stone Marl—abounds in many places near Tweed side. It has formerly been used in considerable quantities, but the more immediate effects of lime have entirely set aside the use of stone marl.

Shell Marl—is found in many places in Glendale Ward; but the greatest quantity is at Wark and Sunny Laws; it has been formed by a deposit of various kinds of shells, (many of which are yet perfect) forming a stratum (several feet in depth) of pure calcareous earth; it is used with great advantage, at the rate of 20 or 30 cart loads an acre.

Sea Wrack, Sea Ware, or Marine Plants—driven a-shore by the tide, are used with great effect, wherever they can be had. Of these the *fucus vesiculosus*, and its relatives *F. serratus* & *inflatus*, are not held in much estimation, and when used, require to be laid up in large heaps to putrefy. If laid upon the land, as the others are, when taken immediately from the shore, they dry, and turn to a black coriaceous substance. The *fucus digitatus* is the great favourite, and another species called *May weed*, which we cannot point out by its Linnean name, not having had an opportunity of seeing it.

Coal Ashes---are chiefly used in the vicinity of the principal towns, as a dressing for grass land; for this purpose they are found of considerable benefit, especially upon strong, coarse, and wet lands.

IMPLEMENTS OF HUSBANDRY.

The Carts—USED in this county are mostly drawn by two horses; they are, in general, heavy, clumsy, and ill formed, and such as we think few districts would wish to imitate.

Waggens—drawn by four horses, are used by some farmers for leading coals and lime; but we hope a few years will shew the absurdity of employing these unwieldy carriages, so destructive to roads, and of so little utility to farmers.

The Swing Plough—made in imitation of the Rotherham plough, is in general use through every part of this county; its form is constantly varying, no fixed rules being known for its construction; scarce two carpenters making them alike, differing widely in length and height of the beam, point of yoking, form of mould board, &c. By observation, experience, and remedying defects when pointed out, some of them have obtained the art of making very good ploughs, whose forms are nearly what they ought to be.*

Harrows.—A large heavy harrow called a brake, is commonly used for reducing rough land, especially fallows. Single horse harrows, containing four bulls, and 24 tines or teeth, five or seven inches long, (below the bull) are generally used for harrowing in seed, after it has had a singling by the brake; a man drives three horses, and every horse draws his own harrow. Some people use two horse harrows, joined in the middle by crooks and loops; and also small light harrows with short tines, for putting in grass seeds.

Rollers—for reducing cloddy land, rolling wheat in the spring, and grass seeds, are mostly made of wood; they are generally $5\frac{1}{2}$ feet long, and from 12 to 30 inches diameter: those used for flattening the one bout ridges, for drilling turnips upon, are only nine or ten inches diameter.

Drills.

* An Essay on the Construction of the Plough, deduced from Mathematical Principles and Experiments, will shortly be offered to the Public, by J. Bailey.

Drills.—Those used for drilling turnips are mostly hollow cylinders of tin, with holes of a sufficient size for letting the seed drop out. The defect of this drill is, that when the holes are made of a due size for sowing a proper quantity, they are apt to stop; by which means, considerable spaces are sometimes unfown. To remedy this, the holes are made wider, but then much more seed is sown than necessary.

For sowing the different kinds of grain, the drill with globular cavities on the outside of a solid cylinder is used, in preference to Cook's drills. All these drills are defective, in not being able to regulate the quantity of seed sown, to suit soils, seasons, &c.*

Threshing Machines—are now becoming general in the northern parts of the county; they are all upon the principle of the flax mill; which principle was first introduced into this county for threshing corn, by Mr. Edward Gregson, near 20 years since; † the machine he used was worked by a man, who could thresh with it 18 bushels of wheat in a day; but being hard work, and Mr. Gregson dying soon after, it was neglected. Mr. Thomas Gregson informed us, that his brother Edward took the idea from something of a similar nature he had seen in Scotland, probably the same which Mr. David Meldrum gives an account of, about the same time, in a letter to Mr. William Charge, of Cleasby, in the county of

* A drill is now making, and will shortly be presented to the Board of Agriculture, which we presume will remedy this defect.

† About this time, Mr. Oxley erected a threshing machine at Flodden, moved by horses, in which the corn was fed in betwixt two *fluted rollers*, and struck by switchers, placed as those are in the present machines; only they *hung on hinges*. Those in use now, and of Mr. Gregson's, are *fixed*. The complaint of Mr. Oxley's machine was, that it did not thresh common oats clean, probably for want of velocity; for it is found in the machines now used, that if the switchers move with a velocity of only 1500 feet per minute, they will not thresh clean; and experience has proved, that to thresh common oats clean, requires a velocity of 2500 feet per minute.

of York ; which he describes, as being the same as the flax mill ; that it threshed 150 bushels of oats a day, which dropped through a screen into a winnowing machine, that dressed them at the same time.

We were informed by Francis Kinlock, Esq. of Gilmerston, in Scotland, that while he was attempting to perfect Mr. Liderton's machine, he saw a flax mill, made for the use of poor families, worked by a man. It struck him, that it would thresh corn, and he got one made, with the addition of two smooth rollers, for taking in the corn ; the work being too hard for a man, he sent it to Mr. Mickle's mill, to have it tried by water. Soon after, Mr. Mickle's son built a threshing mill at Kilbogie ; and after ten or twelve had been erected in the neighbourhood, by other workmen, he applied to Mr. Kinlock to take out a patent, who told him, that he did not look upon it as an original invention ; and that a patent would not be of any use. Some time after this, Mr. Mickle took out a patent, (for England only) in his own name, for the making of a machine, whose leading principle had been applied to the same purpose, at least ten years before.

These machines are moved both by water and by horses ; the former is certainly the best power where it can be got, as most of those that have been erected lately require four horses. The best and simplest we know that goes by two horses, is at Doddington, erected by Mr. Wilkie, the late tenant, the expence of which was about 60l.

In those which have a winnowing machine under them, the corn and straw is thrown together upon a screen, through which the grain drops into the winnowing machine, and from off which the straw used to be taken by a man ; but a circular rake, invented * about four years since, performs the

* By Mr. Bailey, who first applied it in his machine at Chillingham.

work much better, and saves the expence of a labourer. This rake is now added to all those that have been lately erected ; and only causes an addition to the machinery of one light wheel.

Some of these machines will thresh and winnow twenty-four bushels of wheat in an hour. But the quantity threshed in a given time, depends on the quality of the corn, and the length of the straw.

The number of hands required, are, a woman to feed the machine, another to hand the sheaves to the feeder, a third to receive and riddle the dressed corn.

The Winnowing Machine—is in universal use here ; we believe very little, if any corn is dressed by any other means—they were first invented by a farmer of a mechanical genius called *Rogers*, who lived at Cavers near Hawick, and whose grandson, now a carpenter there, still makes them, and perhaps of as useful a form as any other person ; and at as low rates as from 2l. 8s. to 3l.

Old Rogers, as we were told by his descendant, happened in the year 1733 to see a machine thrown out of the way as useless in an old granary at Leith,* of which he took such notice, that on his return home, he set about making one, which he sold to the late Mr. John Gregson of Wark, by whose recommendation they were tried by others, and for many years have been universally used.

G

IN-

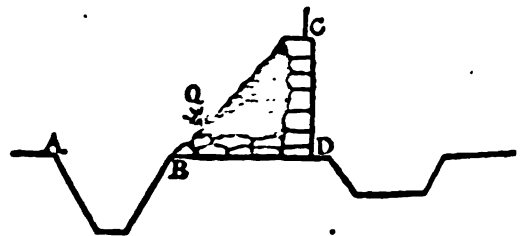
* Young Rogers says, that he believes the machine his grandfather saw at Leith was brought from Holland ; and the writer of this article has somewhere read, or heard, that the Dutch brought them from the Chinese, who were probably the first inventors ; and it is remarkable, that a small farmer in a remote part of Scotland should be the first to bring into notice, this most useful instrument, which we now would not know how to do without.

INCLOSURES.

THE parts of this county capable of cultivation are in general well inclosed by live hedges; the only exception is a small part of the vales of Breamish, Till, and Glen. But even here, the advantages of having well fenced fields is so well understood, and so much desired by the tenants, that we hope in eight or ten years the whole of this valuable district will be inclosed by proper fences.

The size of inclosures vary with the size of farms. In some parts, from two to six or eight acres; in the northern parts, where the farms are large, the fields are from 20 to 100 acres.

The fences most generally used for new inclosures, are earth mounds; at the base of which, and on the edge of the ditch out of which they are raised, are planted the quicks, generally upon a turned sod, six inches high; which we think too low, as we always find the quicks grow much better when planted three fods high, with the thickness of two surface fods laid under their roots. This in most cases doubles, and in thin soil trebles the surface soil, and forms a thick bed of the best earth for the roots of the quicks to grow in, as will be more clearly seen in the annexed sketch of such a fence: where A B is the ditch, $4\frac{1}{2}$ feet wide at top; B C D, the mound; the base, B D, six feet wide; and heights, C D, four feet. Q, the quicks planted upon three turned fods, at least 15 inches high, with surface fods and soil 12 inches thick, under and behind its roots.



The

The quicks should never be planted nearer each other than nine inches, and upon good land a foot. Quicks, four or five years old, with strong clean stems, are always to be preferred to those that are younger and smaller.

It is a custom in some parts, to clip young quicks every year. This makes the fence look neat and snug, but it checks their growth, and keeps them always weak in the stem, and, when they grow old, open at bottom; while those that are left to nature get strong stems and side branches, which, by interweaving one with another, make a thick and impenetrable hedge, and if cut at proper times, say every eight or nine years, always will maintain its superiority over those that have been clipped from their first planting. In point of saving labour, and of profit, there is no comparison; and for beauty, we prefer nature; and think, a luxuriant hawthorn in full blow, or loaded with its ripened fruit, is a more pleasing, enlivening, and gratifying object, than the stiff formal sameness produced by the shears of a gardener.

The advantages of inclosing private property in this county, principally arise from separating lands of different qualities, which can by these means be employed in such culture, or depastured by such stock as the occupier thinks is most suitable; and where sheep are kept, they feed with more facility and readiness, being freed from the whims of the shepherd, and the teasing of his dog.

Besides, by separating the dry ground from the wet, a stock-master has it more in his power to avoid that fatal malady the rot.

The Commons—in this county capable of being converted into profitable tillage land, are now very trifling, the greatest part having been inclosed within the last thirty years; the whole amounting to near 120,000 acres. Of this, the commons belonging to the manors of Hexamshire and Allendal contain

50,000 acres, a great part (35,000 acres) of which is high, exposed, heathy mountains. These are to be converted into stinted pastures, not being thought capable of any other improvement.

The increased value of such inclosed commons, depends (as we have stated in our Report of Cumberland) entirely upon the system of cultivation pursued. Upon Bullock common there are lands which in a state of common were not worth more than 1s. or 1s. 6d. an acre, a part of which has been in tillage twenty-five years, and grown three white crops successively, betwixt one fallowing and another. This land is now dear enough at 4s. or 5s. an acre; while Mr. Hopper's of Blackedley is worth 8s. or 10s. His system is, when first broke up from heath, to pare and burn, and plough in the autumn; next spring plough across, lime and sow oats; then fallow and lime, three fother per acre, and sow turnips; after which, oats and grass seeds, four pounds red clover, five pounds white, and one bushel of ray grass, and continue in grass, six or seven years; then plough for oats—turnips—oats—and sow up with grass seeds as before. There are instances, where the increased value is in the ratio of twelve to one, or even more; but these are, where the commons were of no value to the proprietor, which, indeed, is in general the case.

The Extent of Waste Lands—or open mountainous districts, not capable of affording profit from cultivation by the plough, are very great, as we have before stated; considerable quantities of which are private property, and of course may be depastured by sheep or other stock to the greatest advantage; of those that are common, it would certainly be best for every man to know his own share.

Draining would be highly useful to many parts of these districts; there are also many excellent situations for planting,
and

and of all other purposes to which such lands are convertible, this species of improvement seems to us the most promising to make the greatest returns.

Labour.—Through the greatest part of this county, and especially upon the large farms, there are very few servants kept in the house; seldom more than two men and two maids: but the ploughmen, carters, barnmen, shepherds, &c. have each a house of their own, and are generally married. The conditions of servitude for one year are:

2	Cows kept, or money in lieu at 3l. each,	£ 6 0 0
3	Bushels of wheat - at 5s. per bush.	0 15 0
33	Ditto of oats - - at 1s. 8d. ditto	2 15 0
12	Ditto of barley - - at 2s. 6d. ditto	1 10 0
12	Ditto of rye - at 3s. 4d. ditto	2 0 0
10	Ditto of pease - - at 3s. 6d. ditto	1 15 0
24	lb. of cast wool - at 6d. per lb.	0 12 0
1	Bush. of potatoes planted, a pig tethered, keeping hens, &c.	} 2 4 0
	Leading coals, five or six cart loads,	
		1 0 0
		<hr/>
		£ 18 11 0
		<hr/>

They are bound to find a woman labourer to work for the following wages: For harvesting 6d. per day, for hoeing turnips,* haymaking, scaling, weeding corn, &c. used to be 4d. per day, but was last year raised to 6d. per day.

In

* In this branch of labour, the women in the northern part of this county excel. The writer of this has at different times visited Norfolk, Suffolk, and all the principal turnip districts in the island; but never saw turnips so well hoed and compleatly cleaned, as on these borders. Nor does he know a finer sight than in the turnip season to see large fields in garden like culture, quite alive with female hoers, manifesting their happiness by lively strokes of rustic wit, in truly rural simplicity.

"The

In addition to the above conditions the shepherd generally has as many sheep kept as are worth four or five pounds a year ; but, if he has any under shepherd to keep to assist him, the number is increased accordingly. In the hilly districts, their sheep sometimes amount to hundreds, besides six or eight cows.

An overseer, or head servant, has, in addition to the above, as much money as to make his place worth from 20*l.* to 30*l.* a year.

Threshing is mostly done by the piece ; a twenty-fifth part of the corn threshed being the general custom, if the straw be taken away unfolded ; but if the thresher folds the straw, he has a twenty-first part, and finds a woman to help to dress the corn, and to work at all other work, for the same wages as the others ; he has straw for his cow in winter, but pays for her summer's grass.

The yearly wages of house servants are, for men, from 7*l.* to 10*l.* ; for women 3*l.* to 4*l.*

The wages of day labourers are, without victuals or any allowance of beer :

			<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
Men, in Summer,	-	-	1	2	to	1 4
Winter	-	-	1	0	to	1 2
Harvest	-	-	1	6	to	1 9
Women, ditto	-	-	1	0	to	1 3
——— for other work	-	-	0	6	to	0 8
Masons	-	-	1	8	to	2 0
Carpenters	-	-	1	6		

Upon some of the large farms, a carpenter and smith are hired by the year.

The

——— " The ruddy maid,

" Half naked, swelling on the sight, and all

" Her kindled graces burning o'er her cheek,

" While heard from dale to dale,

" Waking the breeze, refoinds the blended voice

" Of happy labour, love, and social glee."

THOMPSON.

The hours of working are from fix in the morning to fix in the evening, when the length of day will permit, with the following intervals of rest :

			Hours	Min.
At breakfast	-	-	0	30
Ten o'clock	-	-	0	30
Dinner	-	-	1	30
Four o'clock	-	-	0	30

In all 3 00 hours of
rest, and nine of labour.

Provisions---The price of grain in this county fluctuates very much: betwixt the markets of Newcastle and Hexham; and those of Alnwick, Berwick, and Wooller, there is always a considerable difference,† the prices in the northern parts being in general the lowest, or among the lowest, in the kingdom, owing to the produce being so much greater than the home consumption. This surplus affords large quantities to be yearly exported from Berwick, Alemouth, and other places along the northern part of the coast.

The average prices of grain at Berwick, 1792.

			s.	D.	
Wheat	-	-	5	0	per bushel.
Rye	-	-	3	4	ditto
Barley	-	-	2	6	ditto
Oats	-	-	2	2	ditto
Pease	-	-	3	6	ditto

Fat stock being easily driven from one place to another, keep the price of butcher's meat more upon an equality in all the markets of the county.

The

† Wheat and barley, in Newcastle market, is mostly sixpence a bushel higher; and in Hexham, nine-pence.

The average price of butcher's meat is from threepence-halfpenny to fourpence-halfpenny per pound; but in May and June it generally gets to fivepence.

			s.	D.	
Butter	-	-	0	6	a pound of 16 ounces.
Skim-milk and ewe cheese			0	3½	
Fat goose	-	-	2	0	
Duck	-	-	0	8	
Chicken	-	-	0	6	s. D.
Eggs, per dozen	-		0	3	to 0 6

Roads---The turnpike roads are mostly in good order; those that have an opportunity of getting whinstone, or limestone, are the best; but they certainly would be better if the surveyors would order the stones to be broken smaller and the roads made wider. One great objection to some of these roads is the many steep banks they are disgraced with, some of the worst might have been easily avoided; but it seems the original setters-out of these roads had a predilection for climbing and descending steep banks. This is notorious on both the roads upon Rimside-Moor, without even the plea of being nearer; as the leveller road would have been nearer, travelled in much less time, and with far less fatigue. Some similar cases appear on the post road, which we hope will be remedied in the next application to Parliament for a new act.

The township roads are in some places good, but by far the greatest part are deserving of a different appellation; the cause of this deficiency is in most cases to be attributed to the neglect and manner of performing the statute-work.

One mode of remedying this neglect, would be to appoint a surveyor (with a small salary, who should be empowered to collect the composition due for statute-work, and employ this money for repairing the road where *most necessary* for the

the *public in general*, without having regard to the convenience or influence of individuals.

A book should be kept by the surveyor, which should be yearly examined, settled, and signed by a committee of inhabitants, before it went to the magistrates. We know from experience, that by this means the road would be much better made, and in near double the quantity: for when a farmer sends his cart to perform statute-duty, it seldom carries more than half a load, and the servants practise every manœuvre to put off time, and do as little as possible, which would not be the case with hired carts, as every inhabitant would be ready to report any mal-practices.

The Manufactures, as well as the *Commerce*, are derived from; or connected with the coal trade and mines; such as glass works, potteries, founderies, forges, &c. Two or three essays to establish manufactures of woollens, have been lately made at Alnwick, Mitford, and Acklington, which promise to do well: a cotton mill erected at Nether-Wilton is not so flourishing. There is no doubt but agriculture is much benefited in the consumption of its produce, by the great number of people employed in those undertakings. (Morpeth market alone furnishes weekly, on an average, 1000 sheep and 100 cattle, besides what are sold at home.) But we do not find any new modes of practice or improvements in agriculture introduced in their vicinity, or resulting from the exertions of those connected with them.

HINTS FOR IMPROVEMENT.

TO those who practise the system of taking two or three white crops to a fallow, and of continuing their lands in tillage for nine, twelve, or more years, and of sowing it up

H

with

with common hay-seeds, white clover, &c. and letting it continue as many years in grass, as it continued in tillage; we would recommend some of the systems mentioned towards the latter end of the article *Rotation of Crops*, (see page 32) and instead of eight or ten bushels of common hay seeds, to sow as many pounds of red clover, and from two to four pecks of ray grass.

We have before expressed our surprise, that *beans and peas* were not *drilled* in all that extensive district along the coast, where they are so much cultivated. We hope that the good sense and enterprising spirit of the wealthy farmers of this district will no longer be swayed by old customs, but will be ready to make a fair experiment of a system which has been practised on similar soils with success, and may, in all probability, be equally beneficial on theirs. The difference betwixt a naked fallow, and a crop of beans, is too striking to need any elucidation.

There are many parts of this county capable of deriving great benefits from the practice of watering meadows, especially where the waters are unmixed with any vitriolic impurities derived from their connection with coal-mines, or strata of an aluminous earth. We have also our suspicions of such waters as are strongly tinged by infusions of peat-moss.

Draining---is also another operation from which great advantages are to result; but these should be *below drains*, executed with judgment, and well secured: and not *surface drains*, a foot wide, and six or eight inches deep; such are mere *temporary reliefs* to a tenant, but no *permanent improvement*.

There is certainly great improvements to be made in the stock of this country; and, like many other branches of science, the more we investigate the subject, the more we are convinced of its unlimited improvements. But improvements

ments of this kind are not so easily spread as those of cultivation. If a farmer sees any modes of practice more beneficial than those he knew before, he can readily adopt them ; or if he discovers and selects a new variety of any species of grain more productive and more valuable than any hitherto known, it multiplies so fast, that it is readily disseminated ; but *improved breeds of stock* are not so readily diffused ; they are much slower in their propagation, and much more easily contaminated, and are only to be preserved by *attention and judgment*. When *these* become general, we may hope that improved breeds of stock will prevail over the whole county. This period is probably more distant than a true patriot would wish ; but in the mean time we hope, that those who are already possessed of improved breeds of stock, will not slacken in their pursuits ; that by their example, the knowledge and practice of breeding may, by degrees, be better understood, and a spirit of emulation more generally diffused. When we consider and reflect how slow that most valuable breed of sheep (now best known by the appellation of the *Dishley Breed*) has spread, and how very small a part of this island they still cover, one would be almost led to think that breeders both shut their eyes and ears. Mr. Bakewell has been employed above 40 years in the important task of improving that breed of sheep, to a degree of perfection unknown at any former period ; yet it is a very few years since many of his near neighbours pursued a very different, and, we believe *now*, confessedly more unprofitable sort. To this day, we are pretty well informed, that more than half of the large fertile county of Lincoln still follows a slow, ill thriven, unprofitable kind, though adjoining to the county of Leicester. This is the more lamentable, because that county certainly produces more sheep than any other in this island, and perhaps we do not hazard too much if we assert it as our opinion, that it sends more mutton to market than any two

counties in the kingdom. However, we flatter ourselves, that the labours of the Board of Agriculture will have a happy tendency towards opening men's eyes, and convincing them of the propriety of not only cultivating the ground in a more masterly manner, but of stocking the pastures with the most profitable animals.

Nothing would tend so much towards forwarding the perfection of Agriculture in all its branches, as *public farms* in every county, conducted by proper persons; and as the gentlemen of large landed property would be the most interested in the results of such an institution, they certainly ought to be the guardians and supporters of it. The principal expence would be at its first institution; when once got into a proper system, it would require little, if any further aid.

If estates of 500l. a-year, and upwards, were only to contribute 10l. per thousand, yearly rent, it would, in this county, raise a sum sufficient for setting forward the undertaking. We suppose the farms to contain from 700 to 1000 acres, of various sorts of land, some mountain pastures, and an opportunity of converting a part of it into watered meadows. We know situations of this sort that might be rented for five or six hundred pounds a-year.

A farm of this kind would not only be a school where youth might be instructed in agriculture; but even experienced farmers might often visit it with advantage, to learn the results of new experiments, and adopt those that promised to be useful. It would be easy to enlarge on this subject, and suggest many useful appendants to such an institution, should the gentlemen of landed property ever think of carrying a scheme of this kind into execution.

OBSTACLES TO IMPROVEMENT.

IN our journey through this county, we found that the payment of tythes in kind was considered as the chief obstacle to improvement. In our Survey of Cumberland we have shewn the great uncertainty of employing money in speculations of improving land, and that the tythes, in such cases, are a large portion of a man's capital in trade; and not a tenth of the *improved produce* of the earth, which is all that some have believed was intended by the original imposers, as there can be no wish to take any thing from the holders of tythes, but to render them a fair equivalent, for what is justly their due; (which there would be little trouble in doing, notwithstanding the many difficulties that have been invented, to perplex this most interesting question) it is to be hoped that the time is not far distant, when this great means of national improvement will be brought under the consideration of parliament.

MISCELLANEOUS OBSERVATIONS.

Moles and rats — ARE two species of vermin which we think capable of being in a great measure extirpated, or so far reduced, as to render their depredations of little consequence. In Cumberland, a mole is rarely seen: this is in consequence of every occupier of land contributing in his due proportion towards their destruction. A similar plan established in this
county

county for destroying vermin, we believe, would readily be complied with by every good farmer ; and the bad ones ought not to have it in their power to injure their more industrious neighbours.

Crows—of late years, have become a very great nuisance, not only for rooting up wheat, and other grain, in a sprouting state ; but clover and potatoes, corn stacks, and young plantations, are greatly injured by them. Last spring, a collection of sixpence a plough was made by a few farmers in Glendale Ward, for pulling down their nests. Many thousands were destroyed by this means ; and we hope the practice will be continued until they are found less pernicious.

Dogs—in every place are swarming: two thirds of them at least are kept by people who have no manner of use for them ; and who are complaining of their inability to obtain food for their families. It would be doing these people an act of justice, to exempt them from doing statute duty on the highways, on condition they did not keep a dog ; and to supply the deficiency by laying a tax upon dogs, which tax should be applied towards repairing the roads.

Weights and Measures—are in a sad state of confusion ; a pound, a stone, a bushel, a boll, are rarely the same in different markets ; and frequently vary in the same market for different articles.

The Board of Agriculture could not do the public a greater service, than by bringing forward a regulation of weights and measures. One weight, and one measure, derived from the same root, and increasing or decreasing in a ten fold ratio, would introduce such simplicity, ease, and perspicuity, into all transactions of business, (where calculations are necessary) as would

(63)

would prevent the numberless mistakes and errors which are daily happening.

Preparations for remedying this great inconvenience have been made at different times, and we believe, there are sufficient materials for perfecting the measure, whenever it is thought proper to bring it forward.

6

GENERAL VIEW

OF THE

AGRICULTURE

OF THE COUNTY OF

CUMBERLAND.

GENERAL VIEW
OF THE
AGRICULTURE
OF THE COUNTY OF
CUMBERLAND.

WITH
OBSERVATIONS ON THE MEANS OF IMPROVEMENT

BY
MR. JOHN BAILEY,
OF CHILLINGHAM,

AND
MR. GEORGE CULLEY,
OF FENTON, IN NORTHUMBERLAND.

Gr. Brit.
DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE
AND INTERNAL IMPROVEMENT.

LONDON:
PRINTED BY C. MACRAE,

MD CC XCIV.
1854

S455
A2
v.b
no.4

ADVERTISEMENT.

THE following valuable communication, respecting the present state of Husbandry in the County of Cumberland, and the means of its improvement, drawn up for the consideration of the Board of Agriculture, is now printed, merely for the purpose of its being circulated there, in order that every person, interested in the welfare of that county, may have it in his power to examine it fully before it is published. It is therefore requested, that any remark, or additional observation, which may occur to the reader, on the perusal of the following sheets, may be *written on the margin*, and transmitted to the Board of Agriculture, at its office in London, by whom the same shall be properly attended to; and, when the returns are completed, an account will be drawn up of the state of Agriculture in Cumberland, from the information thus accumulated, which, it is believed, will be found greatly superior, to any thing of the kind, ever yet made public.

The Board has adopted the same plan, in regard to all the other counties in the united kingdom; and, it is hardly necessary to add, will be happy to give every assistance in its power, to any person who may be desirous of improving his breed of cattle, sheep, &c. or of trying any useful experiment in husbandry.

TO

TO
THE READER.

IT is requested, that this Paper, may be returned to the Board of Agriculture, before the first of March next.

It is hardly necessary to add, that the Board does not consider itself responsible, for any fact or observation contained in these Reports, which, at present, are printed and circulated, for the purpose merely, of procuring additional information, and of enabling every one, to contribute his mite, to the Improvement of the Country.

Jan. 1794.

INTRODUCTION.

THE county of Cumberland is situated between the latitudes of 54 deg. 6 min. and 55 deg. 7½ min. North ; and the longitudes of 2 deg. 13 min. and 3 deg. 30 min. West from London. Its length from St. Bee's Head, in a N. E. direction, to Butter Burn, is 58 miles : its mean breadth, in a N. W. direction, is 30 miles ; and it contains 1516 square miles, or 970,240 acres.

It is bounded on the east by Northumberland, 51 miles

———— Durham,	-	7
on the west, by the Irish Sea,	-	67
on the north, by Scotland and	}	30
the Solway-Firth,		
on the south, by Westmoreland,	-	48
———— and Lancashire,	-	21

Making the whole circumference, - 224 miles

The surface is beautifully diversified with level plains, and rising eminences ; deep sequestered vales, and stupendous mountains ; open, braky, heathy commons, and irregular inclosures, in some parts enriched with tufted groves and rising plantations ; the whole watered by innumerable streams and extensive lakes, abounding with fish of various denominations, which, with plenty of game, add to the support and recreation of the inhabitants.

Tho' this county enjoys an extent of 67 miles of sea-coast, yet it cannot boast of its navigable rivers ; the tide flows not more than two or three miles up the greatest part of them ; even the Eden, by much the largest, is perplexed with shoals.

shoals, and its navigation cannot be said to reach beyond Bowness, though the tide flows a few miles further.

This county abounds with coal, lime, and lead-ore; it also produces blacklead, copper, gypsum, lapis caliminaris, and excellent slate.

Cumberland naturally divides into two districts:—the *mountainous*, incapable of being improved by the plough; and the *cultivable*, or all such parts as have been, or can be improved by tillage.

The mountainous districts are separated into two divisions, one of which bounds the east side of the county, and is the *highest part* of that ridge of mountains, that divide the eastern and western coasts of the island, from Derbyshire in England, to Linlithgow in Scotland. Cross-fell, Hartside-fell, Gelsdale-forest, and Spadeadam-waste, are the names of that portion of the ridge which passes through this county. These mountains are composed of strata of different kinds of stone, and are rich in coal, lime, and lead-ore; but are no way remarkable for any striking irregularities of surface.

The other division of mountainous districts occupies the southwest part of the county, and they are known by the names of Skiddaw, Saddle-back, Helvella, Wreynose, Hardknot, Seafell, &c. &c. which are remarkable for their steep, broken, rocky sides, and romantic shapes; and are in general one mass of that kind of stone, which produces the beautiful blue slate, so much, and so deservedly, esteemed for covering the roofs of houses. They are destitute of coal, lime, or any metallic ores; but in some measure repay this defect, by affording such valuable slates; and producing that singular mineral substance, *blacklead*, which is found in Borrowdale, and, it is said, no where else in the southern part of the kingdom.

The height, the ruggedness, the steepness of the sides, (in some places ornamented with wood and projecting rocks) the varied forms, sublime assemblage, and picturesque beauty of these mountains, and the lakes they environ, form scenes that probably few other places in the island can equal; and have at different

rent times, exercised the pens of many descriptive writers. But it only comes within our province to remark, that this kind of slaty stone appears to be very friendly to vegetation. The soil which covers the steep sides of these mountains, and found in considerable depth at their bases, is, in great part, decayed slate; and the most fertile soils in the vales, we suspect, have a large portion of this slaty matter in their composition. This is the case in the vale of Keswick, and particularly at Mill-beck, and along the western base of Skiddaw.

From a map of Cumberland, published by Messrs Hodgkinson and Donald, laid down from a scale of two miles to an inch, we calculate, that

	ACRES.
The mountainous districts contain, -	342,000
Improvable common, - - -	150,000
Old inclosures, - - - -	470,000
Lakes and waters, - - - -	8,000

Total quantity of acres in the whole county, 970,000

Climate.—In a county like Cumberland, enjoying such an extent of sea-coast, and where so large a portion is occupied by mountains, and those reckoned amongst the highest in the kingdom, * the climate must be various. Along the coast,

B and

* The highest mountains in the kingdom, are

	FEET.	
Benevis in Scotland, - - -	4,350	the highest in Scotland.
Benlomond, ditto, - - -	3,240	
Snowdon, in Wales, - - -	3,456	the highest in Wales.
Croft-fell in Cumberland, - - -	3,400	} the highest in England.
Helvelin, ditto, - - -	3,324	
Skiddaw, ditto, - - -	3,270	
Saddleback, ditto, - - -	3,048	
Blackhouse heights, Selkirkshire, - - -	2,370	
Ettrick-Pin, ditto, - - -	2,200	
Carter-fell, Roxburghshire, - - -	1,662	
Whomside, Yorkshire, - - -	1,350	
Ingleborough, - - -	1,239	

and for a considerable way up the rivers, the snow seldom lays above twenty-four hours ; but upon the mountains the snow will continue for six or eight months. Of course, the lower parts of the county are mild and temperate, while on the higher lying grounds, and upon the mountains and their vicinity, the air is cold and piercing. But the whole is healthy, though subject to great and frequent falls of rain, particularly in the autumn, which makes their harvests very precarious and expensive. This excess of wet, we believe, is more or less the case upon the whole of the western coasts of the island.

The soil is various, but may be classed under four different heads.

1st. *Fertile clays*, or rather *rich strong loams*, occupy but a small portion of this county. Formerly this kind of soil was generally employed in grazing, or the dairy ; but since the introduction of growing wheat, it has been converted into tillage, and produces excellent crops of grain.

2d. *Dry Loams*, including the various degrees from the rich brown loam, to the light sandy soils. This is the most prevalent, occupying a greater portion of the county than any other. Not only the lower districts, but the steep sides of the mountains, are in general of this soil ; and in many places, even their summits are covered with a dry sound earth, producing green sward, with little heath. We suppose at least one half of the lower, or cultivatable district, is of this valuable soil, excellently adapted to the culture of turnips, artificial grasses, the various species of grain, and of breeding and feeding the most improved kinds of stock ; particularly sheep, it being perfectly sound, or safe from the rot.

3d. *Wet Loam*, generally on a clay bottom. The fertility of this soil is various, depending on the thickness of the staple, and the nature of the clay below. This soil is dangerous for sheep, but may be applied with advantage to keeping cows for the dairy, breeding young cattle and horses, and to the culture of wheat, oats, clover, and ray-grass.

4th, *Black Peat-Earth*, is most prevalent on the mountainous districts, particularly those adjoining Northumberland and Durham. It is also found on moors or commons, in the lower parts of the county; in some places only a few inches thick, upon a white sand, well known, by those whose lot it has been to cultivate it, to be an ungrateful and unprofitable soil.

ESTATES, AND THEIR APPENDAGES.

THERE are probably few counties, where *property in land* is divided into such small parcels as in Cumberland; and those small properties so universally occupied by the owners; by far the greatest part of which are held under the lords of the manors, by that species of vassalage, called *customary tenure*; subject to the payment of fines and heriots, on alienation, death of the lord, or death of tenant, and the payment of certain annual rents, and performance of various services, called *Boon-days*, such as getting and leading the lord's peats, plowing and harrowing his land, reaping his corn, haymaking, carrying letters, &c. &c. whenever summoned by the lord.

We cannot pretend to be accurate, but believe, that *two thirds* of the county are held by this kind of tenure, in tenements from 5*l.* to 50*l.* a-year; but the generality are from 15*l.* to 30*l.*

On the large estates, there are some farms from 100*l.* to 150*l.* a-year, few reach 200*l.* and we only heard of four or five, that got as high as 3 or 400*l.* a-year; but none above that rent. The rental of the largest estate in the county is said to amount to about 13,000*l.* per annum.

Buildings. Through the greatest part of this county, the *farm-houses* are remarkably well built of stone; * the blue-slate roofs, and white dashed walls, give them a look of neatness, and of comfortable dwellings, that is peculiarly pleasing, and prepossesses a stranger with a favourable idea of the cleanliness of the inhabitants; an idea which he finds well-founded, on further investigation.

These houses, have, for the most part, a kitchen and a parlour in front, a tooftall back-kitchen and milk-house behind, with four or five lodging-rooms above; the front contains five middle-sized sash-windows, two below stairs, and three above.

Where farms are so very small, no great extent of farm offices are wanted; a barn, a byer for housing their cattle in winter, and a small stable, are in general all that is necessary: no regular plan for their form or scite, seems to have been adopted, every one building according to what he thinks the most convenient for his stock and situation; but they are mostly built at each end of the farm-house. A fold-yard, surrounded by proper offices, *with a shed for cattle*, are very rare; we did not observe them in more than half a dozen of places †.

We observed in some parts of the county, a singular practice of covering the perpendicular walls of their houses with blue-slate, we suppose, to prevent any kind of moisture from penetrating them.

Woods. This county is far from being well wooded, the Irling, Eden, and Caldew, are the only rivers, whose banks produce any quantity of *natural wood*; and of these, the banks of the Caldew seem to have the largest proportion of old oak-timber. Of the value of the oak-timber proper for the purposes of ship-building, we could obtain no satisfactory information,

* Except a small district, in the neighbourhood of Abbey-holme, where they are built of mud; and form a miserable contrast to the buildings in the other parts of the county.

† Of these, Lord Muncaster's was by far the most complete.

information, but suspect, from what we saw, it is of small extent. We fear, the oak is not suffered to attain a sufficient age for this purpose; as we saw a wood near Westward (now felling) of upwards of two hundred acres, that was little more than thirty years old, the whole cut away, without leaving any to stand for ship timber.

Of late years, many plantations have been made near gentlemen's seats, which shew, by their vigorous growth, how well adapted the greatest part of this county is for the production of wood. From the nakedness of the country along the coast, one would naturally conclude, that the situation was inimical to that production; but Lord Muncaster's extensive and thriving plantation near Ravensclaf, shew, that the nakedness of the land is owing to other causes.*

Leases. The noblemen and gentlemen who enjoy the most considerable landed property in this county, *let no leases*; some have verbal contracts for seven years, which are next to none; and of those who let leases, the term is only for five, seven, or nine years, besides the usual reservations of mines, wood, &c. The tenant covenants to pay the rent, cesses, taxes, and to keep all in repair. Some are confined to a certain quantity of tillage, and to fallow one-fourth yearly; others are under no restraint of this kind; a few others are confined to lay on a certain quantity of lime, and to sow with white clover and hay-seeds the lands that are laid to grass. These are the principal covenants that affect agriculture. To enumerate such as are of a local nature, respecting the performance of customs, services, grinding corn, payment of chickens, &c. would add little to the improvement of agriculture, or enlargement of scientific knowledge.

LIVE

* If a customary tenant plants wood, he cannot cut it without leave of the lord; in some cases, the lord claims it as his own.

LIVE STOCK.

THE Horses are middle sized, from fourteen to fifteen and a half hands high, of various colours ; but bays and chefnuts seem the most prevalent ; for a small farm, where horses must answer for both draft and riding, they are probably more suitable ; but certainly might be improved by stallions from the North-Riding of Yorkshire, the best breed of horses we know for the double purpose above-mentioned.

The Cattle, are a small breed of long horns, with a few exceptions of the Galloway breed intermixed, particularly along the coast from Whitehaven to Carlisle.

This breed of long-horns is not distinguished by any peculiar good qualities, which is not to be wondered at, when it is considered that, probably at this time, there is not one person in the county that pays any attention to its improvement. Twenty years ago Mr. Hazle, of Dalemain, had made some progress in this business, and gained a very useful breed of long-horned cattle ; but his successors neglected them, and the labours of the good old man are totally lost.

The long horned, and the Galloway polled cattle, are probably the best adapted to this county of any other ; but the kind of long-horns that occupy it at present, may certainly be much improved, by paying proper attention to breed always from the best males and females that can be selected. This end would be the readiest attained, by getting good bulls and heifers from the midland counties, where the long-horned breed are brought to great perfection.

The Sheep breed in this county are only of *two kinds*, and these two are probably something related ; one of them is peculiar to that high, exposed, rocky, mountainous district, at the head of the Duddon and Esk rivers, more particularly known by the names of Hardknott, Scalefell, and Wrynose.

The

The ewes and wethers are all polled or hornless, and also many of the tups; their faces and legs speckled; but a great portion of white, with a few black spots on those parts, are accounted marks of the purest breed, as are also the hornless tups; they have fine, small, clean legs. We were told that the lambs, when dropt, are well covered; the wool is short, and forms a thick matted fleece, much finer than that of the blackfaced heath sheep; with which variety they seem to have been crossed, as we suspect, from some of the rams having spiral horns, and from some *kempy hairs* being intermixed amongst some fleeces of the wool: they are a lively little animal, well adapted to seek their food amongst these rocky mountains, in many places stony and bare; and where covered, the soil is thin, but the herbage mostly green, though heath is partly to be found on their summits. They have no hay in winter, and support themselves in the deepest snows, by scratching down to the heath, or other herbage; indeed it seldom happens, but that some parts of the mountains are blown bare, which the sheep find out. They do not face the coming storm as reported, but, like other sheep, turn their backs on it; and, in such weather, they generally gather together, and keep stirring about; by which means they tread down the snow, keep above it, and are rarely over-blown.

The loss *per cent. per ann.* is of hogs from 5 to 10.—
Ditto, ditto, of old sheep, from - - - - 2 to 5.

The ewes are kept as long as ever they will breed lambs, and are often from ten to fifteen years of age before they are sold. The wethers go off at four one-half years old. Both ewes and wethers are sold from these mountains, and killed without being put on any better pasture. We saw a carcase of one of the weathers at Ravenglas, very good mutton, which weighed 11lb. a quarter, and had 10 or 12lb. of tallow. The ewes weigh from 6 to 8lb. a quarter; the fleece weighs 2lb. and sold last year at 6d. *per lb.* which we think much below its value.

The

The mountains on which these sheep are bred, happen not to be common, but belong to Lord Muncaster; as do also the stock that depasture them, which have, time immemorial, been farmed out to *herds* at a yearly sum. From this circumstance, these farms (three or four in number) have obtained the name of *Herdwicks*; that is, the district of the *herds*; and the sheep the appellation of *Herdwick Sheep*. They have obtained such a character for *hardiness* of *constitution*, that Mr. Tyson,* who farms the principal flock, sells a number of tups every year into various parts of the county, to *improve the hardiness of other flocks*; the price is often as high as two guineas and a half.

The Sheep, through the whole of this county (except the *Herdwicks*) have been descended from the *black-faced, coarse-woolled, heath sheep*; but by crossing with some other kind, (probably the *Herdwicks*) many of them have acquired a large portion of *white* on their *faces* and *legs*; some have those parts speckled, and others totally black; but like the parent stock, they are in general horned, high shouldered, narrow backed, flat sided, strong boned, and many with thick, rough, hairy legs. The *wool* is coarse and long, but falls short in both these respects to what is produced by the black faced sheep from *Moffat* and *Linton* in *Scotland*, and the *Kentmore* sheep in *Westmoreland*; the fleece weighs from 3 to 4lb. which sold last year from 5½*d.* per pound; the very best at 6*d.*

The management of Sheep over all this county is very similar; through the summer the whole flock is depastured on the commons, and range at large without any person to look after them. In November the whole is gathered together and *salved*.† The old sheep are turned again upon the common, but

* We were told by Lord Muncaster's agent, that the family of Tysons have lived in this sequestered spot above four hundred years.

† The *salve* is composed of butter and tar, in the proportion of sixteen pound of the former to four quarts of the latter. This quantity will *salve* forty sheep.

but the hogs are kept in the old inclosures; some part of which has been kept uneaten to support them through the winter. On the approach of snow, the old sheep are brought to the inclosures, or to some part of the common adjoining, and are daily foddered with hay, while the storm continues. Those who have not a sufficiency of inclosed ground for wintering their hogs, take wintering for them, in those parts of the low country where they do not breed sheep; the price, 2s. *per* head, to have hay in bad weather.

In Eskdale and Mitredale, they formerly kept their hogs in the house all winter on hay, and drove them to water once a day; but this practice is now laid aside, and they winter them upon the inclosed grounds, which are previously kept fresh for that purpose. They give no hay to their sheep here, which are a good deal of the *Herdwick blood*.

The sheep are sold in the autumn, to the graziers from the eastern part of the county;

Wethers at 3 $\frac{1}{2}$ years old, sell for - 11s. to 13s.

Ewes from 6 to 8 do. sell for - - 6s. to 7s.

From the south-west;

Eskdale wethers at 4 $\frac{1}{2}$ years old, sell for 10s. to 13s.

Ewes from 6 to 10 do. sell for - 4s. to 6s.

Skiddaw wethers at 4 $\frac{1}{2}$ do. sell for - 13s. to 14s.

Ewes from 5 to 6 do. sell for 6s. to 8s.

We have no hesitation in saying, that the breeds may be improved, for there are few places where they have been more neglected. At Penruddock we observed some singularly rough legged, ill-formed sheep. On asking an old farmer, from whence they had that breed, or where they got their tups? He innocently replied, *Lord Sir! they are sik as God set upon the land, we never change any!* The latter part of this simple statement we readily believe; but that God set upon the land such ill-formed, unprofitable animals, we cannot so readily assent to; and rather think they have acquired their present deformity and bad properties, by the indolence

dolence and ignorance of their owners. We wish we could avoid adding, that the same practice (which guides the men of Penruddock) is too prevalent in every part of the county.

We found, in general, that the sheep breeders here, like those in most other countries, are very much attached to their own breed. As they have never tried any other, they cannot be admitted as proper judges, of the comparative merit of different kinds of sheep; but supposing, for the present, their own breed to be well adapted to their situation, why not improve them, by selecting the best males and females, and rear a better offspring of their own kind; or by hiring, or buying, some of Mr. Tyson's **BEST FORMED** and **FINEST WOOLLED** Herdwick tups, instead of getting tups from Kentmore in Westmoreland, which appeared (from what we saw) to have nothing to recommend them, but, in our opinion, *fine and coarseness*? The shape of these sheep is, in every respect, the reverse of what it ought to be; the back narrow, the carcass long and thin, supported upon large rough legs, with coarse hairy wool, hanging down from their throats, all the way to their breast, which gives them more the appearance of goats than sheep.

Within the last three years, a few long woolled sheep have been introduced into this county—from the Yorkshire Wolds, by Lord Muncaster; from Northumberland, by Mr. Blacklock, of Corby; Mr. Richardson, of Rickaby; Mr. Porter, Carlisle; Mr. Falder, near Roes Castle; Mr. Lamb, Netherby; and probably a few others.

The time is too short, for these gentlemen to form any judgment, of the advantages to be derived from their spirited exertions. It ought to be observed, they have not been so fortunate, as to get the *improved* breed of long woolled sheep.

MANAGEMENT OF FARMS.

THE management of farms in this, as well as every other county, must vary with circumstances; the most material distinction here is, *farms* that have a *right of common*, and those that have *none*.

The farms that have a right of common, breed sheep and cattle, and sell them, to be fatted, to those who do not enjoy that privilege. There are some instances, where the breeder feeds a part of his own stock, but these are rare.

The farms, which have no right of common, seldom or ever breed sheep; some breed young cattle, but their grass land is chiefly employed in grazing, or keeping cows for the dairy.

The *Dairies* are small, and mostly employed in making butter, which is of an *excellent quality*. Those that are situated in the vicinity of towns, sell it weekly, by the pound, to supply the consumption of the inhabitants. In other situations, it is put into firkins of 56lb. each, and sent to distant markets. We were informed, that the value of butter sent out of the county yearly, amounted to upwards of 30,000*l*. The average quantity of butter from one cow, is generally estimated at two firkins: some cows will give twelve quarts of milk at a meal, and make seven pound of butter *per week*; but the most general average is, seven or eight quarts of milk at a meal, and five pounds of butter *per week*, through the summer.

Skimmed milk *cheese*, is the principal kind made here, and chiefly consumed at home.

The grass lands, near the principal towns, are mostly applied, to the purposes of keeping cows, to supply the inhabitants with milk, and of growing hay, and pasture for horses.

The most general *system of grazing* is, on the richest grounds, *cattle with a mixture of sheep*; on the less luxuriant, *sheep only*.

The kinds of cattle usually fattened, are the native country breed, and Scotch cattle, both Kyloes and the Galloway kind. Of these, they find the Kyloes the quickest feeders, the Galloways next, and their own country breed of long horns, the slowest.

The profits of grazing cattle, depend much on the skill of the buyer, in *selecting the quickest feeders*; and when fat, in selling them for their *full value*; also, not unfrequently, on the state of markets.

The best grazing lands we saw were at Pap Castle, near Cockermouth, let at 3*l.* per acre; and the holm lands on both sides the Eden, near Carlisle, let at 2*l.* 10*s.* per acre, for the purposes of *grazing only*. Mr. Toulson, of the former place, buys in oxen and heifers in October, keeps them all winter upon the pastures out of which his fat stock has been recently sold, and gives them a little hay in bad weather. After keeping them near twelve months, they leave, on an average, a *profit of 5*l.* a piece*; their weight from fifty to sixty stone. But this intelligent gentleman was candid enough to confess, that he thought sheep mixed amongst cattle a more profitable system; and we were glad, to find this mode practised, by all the best graziers in the county.

Of Sheep Grazing, there are two branches; first, feeding wethers; and secondly, ewes for fat lambs: they are both bought in the autumn, are kept on grass the whole time, and get no other food, except hay in stormy weather.

	L.	S.	D.
The profits are, a wether sold fat in October,	-	1	0 0
Fleece 3½lb. at 5d.	-	-	0 1 6
			<hr/>
	£	1	1 6
Deducting prime cost and expence of salving,	-	0	12 6
			<hr/>
Average profit by feeding wethers,	-	-	£ 0 9 0
	2		Ewes,

	E.	s.	D.
Ewes, a fat lamb sold in June,	0	8	0
Fleece $3\frac{1}{2}$ lib. at 5d.	0	1	6
Ewe fat, sold in November,	0	10	6
	<hr/>		
	£.	1	0
Deduct prime cost and salving,	0	8	0
	<hr/>		
Profit by feeding ewe and lamb,	£.	0	12

There are a few who buy in wethers to feed upon turnips, and sell them, in the spring, to Manchester and Liverpool.

The kinds of sheep grazed are, *the country breed, the true black-faced heath sheep, and the Cheviot sheep*. The most experienced graziers *all agreed*, that the true black-faced heath sheep, were *quicker feeders*, and a *hardier* race, than the Cheviot.

On those farms that have a right of common, the grass lands are employed through the summer in growing hay, depasturing their cows, and sometimes young cattle; but the latter are more generally summered on the commons, and in autumn brought into the old inclosures, till the approach of winter, when all the cattle are housed; and from thence the store-sheep have the use of the inclosed grounds, both grass and stubbles. If the farm adjoins the common, the old sheep have generally "a rake" to it once a day.

Tillage. Land is here commonly ploughed by horses; a team of oxen, we believe, is not to be found in the county: the horses are yoked double, and driven with cords by the ploughman. An acre is accounted a good day's work.

The ridges are very narrow, five, six, and seven feet being the common breadth, whether in corn, or in grass. All the grains are sown broad cast, an operation that the narrow ridges make difficult to perform.

Fallows for Wheat, are ploughed four or five times: we saw some very clean, and well managed, gathered up into neat narrow

narrow ridges, on which the wheat was looking healthy, but in general sown too thick and too early.

For Barley, they plough twice, and manure with twenty or thirty cart loads of dung; some add lime. Oats are always sown on one ploughing.

For Turnips and Potatoes, the land is ploughed till it is thought sufficiently fine: both these roots are drilled, at about thirty-inches distance; the dung is put in the bottom of the drill, which, for turnips, they cover up with the plough; flattens the top of the one bout-ridge, by trailing a piece of wood over it, and on the *flattened top* sow their turnip-seed, by a drill which a man pushes before him, like a wheel-barrow. The potatoes are planted at the bottom of the drill, the dung laid upon them, and the whole covered up with the plough.

The Harvest, in general, continues from the middle of August to the middle of October; the corn is all cut by the sickle; the wheat, bound near the bottom, and set up in stooks of twelve sheaves; barley and oats are "*gated*," that is, bound near the top, and set up in single sheaves, by spreading their bottoms in the form of a cone; when dry, they are bound at the bottom, and either led home, or set up in stooks of ten sheaves, if it be not convenient to lead them.

Rotation of Crops. The most prevailing system, through the greatest part of the county, is, to have a crop of white corn every year while in ploughing: such cultivators make no fallows, except ploughing twice, and manuring for barley, can be deemed such.

Where a field is ploughed out from grass, they have oats, oats, barley,—oats; or, oats,—barley,—oats,—oats,—barley; or, oats,—oats,—barley,—oats,—oats,—barley—oats. &c. &c. for nine or twelve years, and then left for grass for seven or nine years. Some few sow hay-seeds and a little white clover; but the greatest part leave it to nature.

On asking a farmer at Uldale why they sowed no clover, or grass seeds, he replied, "*we have no occasion, for the land is naturally*

"*naturally girs proud.*" Those that are experienced in cultivation will readily admit, that after growing from six to twelve white crops in succession, it can scarce be otherwise than *grafs proud*. There is certainly grafs in abundance; but of such kind, as no good farmer would wish to be possessed of. This barbarous system is mostly practised upon the dry loamy soils; which, after being thus left to grafs, cover amazingly fast with moss, probably owing to the bad cultivation and exhausting crops of corn, more than to the wetness of the climate, to which it is generally attributed.

Where they fallow for wheat, the rotation is, fallow,—wheat,—oats,—oats,—fallow; or, fallow,—wheat,—barley,—oats,—fallow, for three or four fallowings, and then left for grafs for seven or nine years: some few sow clover and hay-seeds.

The cultivation of turnips is confined to a few places: it seems to be best understood, and practised at Irthing, Newby, Corley, and a few other places on the Eden. Their rotation is, turnips,—barley,—clover two years,—oats,—oats,—turnips; or, turnips,—wheat,—barley,—clover two years,—oats,—turnips.

We are glad to find, that two or three individuals have adopted the idea of not taking two white crops in succession, and pursue the excellent rotation of turnips,—barley,—clover two years,—then oats, or wheat.

From the above rotations, it appears, that the only grains cultivated in this county are, wheat, barley, oats, and a very few pease, and in some places a little rye. Wheat is a modern production here; a general opinion used to prevail, that wheat could not be grown in many parts of this county. It is not twenty years since Lord Muncaster introduced summer fallows, and the culture of wheat, in the neighbourhood of Ravenglass, where it is now grown in great abundance, as well as all along the coast to Scotland, and in the neighbourhood of Carlisle. The wheat that is sown after turnips or clover,

is.

is trifling, the main supply is from summer fallows; they generally sow two bushels and a half per acre, in September or October, as the season suits, and they reap from sixteen to thirty bushels per acre.

Barley and Oats, being the grains from which the bread of the inhabitants is made, were probably the first, and only corn, grown in this county for many centuries; *bigg* or *bear*, with six rows of grains on the ear, was the kind of barley formerly cultivated; but lately, the common early sort, with two rows, has been introduced. They sow two and a half bushels per acre, in April or May, and reap thirty-six bushels on an average.

The Common Oat, was the only variety grown in this county, and is now by far the most prevalent; but of late years, a few enterprising individuals, have introduced the early varieties of this grain, with great advantage; they are distinguished from the common oat by the name of *layland oat*, and is the *Dutch or Friezland oat*. * They sow from four to six bushels per acre in March or April, and reap from twenty-four to forty bushels.

Pease. In a climate where so much rain falls, and where the harvest is so precarious, the culture of pease would be attended with so many chances of loss, and so few of gain, that we were not surprised to find them so generally neglected. The difficulty of harvesting them, has probably first suggested the idea, of building their stacks in the cloughs of trees, and afterwards in slender high pyramids round the boles of tall trees, to prevent them from blowing over. By this method, they can also lead and stack them, in a damper or moister state; and as they do not come near the ground by five or six feet, they are seldom troubled with mice. The greatest diameter of the stacks is not more than six or seven feet; the height

* Last year Mr. Falder, near Roes Castle, introduced the oat, known on the east borders by the name of *Church's Oat*, (a variety, and perhaps the best variety known of the Poland oat) and which will, no doubt, answer well on all the best rich soils in the county.

height of many twelve or fifteen ; if the tree has not a sufficiency of convenient branches to bear the bottom, they nail a stick or two a cross, to help to form a base. When finished, they have a very singular appearance.

Turnips, were first cultivated in this county, to any effect, for the use of cattle, by Philip Howard, Esq. of Corby, in the year 1755. His first essay was drilled four feet distance, the crop amazingly good ; the weight, on an average, 10lb. each turnip ; some weighed 25lb. He afterwards continued to grow them at two feet, and two and a half feet distance, with constant success, for eight or ten years, before any farmer followed the example. At last, Mr. Collins, of Wetherall, made a trial, and succeeded ; others soon followed him. Mr. Howard sowed with a complicated drill plough, which cost him six guineas ; but the business was much facilitated by the invention of a simple hand drill (much less expensive, and better adapted to the purpose) by Andrew Melrofs, a carpenter of Wetherall. It is, therefore, about thirty years since a few farmers first began to cultivate turnips ; and considering with what tardiness new modes of practice generally make their way (amongst that useful class of society) it is no wonder that the growing of turnips should, in a great measure, be still confined to the vicinity where their cultivation originated ; and we suppose, by the mode of practice, that from this source may be traced the various patches of turnips we observed at Netherby, Burgh, Dalton, and a few other places.

The value of this excellent vegetable is not sufficiently understood in this county, otherwise it must have made a more rapid progress. Probably this may be owing to its being applied to feeding their *own breed of sheep*. We saw several acres of turnips this year that were sold for from 3*l.* to 3*l.* 10*s.* per acre, which a Northumberland grazier, would have thought worth five or six pound an acre, for feeding their *improved* breed.

D

Hoing

Hoeing broad-cast turnips is not understood; if any are sown this way, they go unhoed, and if too thick, are hand-weeded. Mess. Williamson and Monkhouse paid 20s. *per* acre this year, for *hand-weeding* their broad-cast turnips, which might have been twice hoed for six or seven shillings, and the crop *greatly* benefited by the operation.

The drilled turnips are hoed, and set out at about eight or nine inches distance in the rows, which are ploughed between by a small plough.

Cabbages, we believe, are only cultivated by Dr. Harrison, of Penrith, an ingenious gentleman, who amuses himself in cultivating about thirty acres with great spirit and judgment.

Potatoes are cultivated in drills by almost every farmer, not only for the use of their own families, but for sale, where the situation is not too distant from a good market. It is only upon the estate of Sir James Graham, at Netherby, that they are applied to feeding cattle and swine. Mr. Lamb and Mr. Blalock favoured us with the following particulars:

Mr. Blalock feeds cows, and says, that 120 bushels of potatoes, with 16 stone of oatmeal, will feed a cow in three months, and leave a profit of 3 or 4*l.*

The small farmers apply potatoes to feeding swine: thirty bushels of potatoes and ten ditto of corn, made into meal, will feed a sow of eighteen or twenty stone weight, and leave a profit of 1*l.* 15*s.* The potatoes are boiled, and meal mixed with them.

From these data, the value of potatoes may be nearly estimated:

	L.	s.	D.
A cow eats 16 stone of oatmeal, at 2 <i>s.</i>	-	-	1 12 0
120 bushels of potatoes, at 4 <i>d.</i>	-	-	2 0 0
			<hr/>
Profit of a cow,	-	-	£. 3 12 0
			<hr/>
			A sow.

	L.	s.	D.
A sow eats 10 bushels of corn, at 2s. - - -	1	0	0
30 ditto of potatoes, at 4d. . - -	0	10	0
Fire, attendance, &c. - - - - -	0	5	0
Profit by swine, -	£ 1	15	0

From the above it appears, that potatoes for feeding cows, or swine, are worth no more than 4d. *per* bushel. They estimate a fair average crop of potatoes to be 240 bushels *per* acre; the value at 4d. *per* bushel, is only 4l. out of which the seed ought to be deducted, the other expences attending the cultivation of potatoes and turnips being much upon a par.

The land on which these potatoes are grown, is a most excellent turnip soil, and would produce turnips, almost any year, worth 5l. *per* acre for feeding cattle. From the above statement it appears, that an acre of potatoes is of less value, than an acre of turnips, for feeding cattle. Mr. Lamb has been long convinced of this, and says, that the practice of applying potatoes to feeding cattle and swine, is every year losing ground, and that the culture of turnips, which was pretty general here twenty years since, (but gave way to potatoes) is now, in its turn, regaining the situation it so justly deserves.

Artificial Grasses, are confined to a small number—red clover, (*trifolium pratense*) white clover, (*trifolium repens*) common hay seeds, with a little rib grass and ray grass, (*lolium perenne*).

We were informed, that in 1752, no person in the county had thought of sowing a field down with clover, or even hay seeds; and that Philip Howard, Esq. of Corby, was the first person who sowed a field with clover, and taught his countrymen the use of artificial grasses. It is but a few that have benefited by his laudable exertions.

Red Clover, is principally sown where the turnip culture, and summer fallowing for wheat, is practised, and the land continues only two years in grass: it is generally mown the first

year, and depastured the second. The great objection to growing this valuable grass, is the *heaving* of cattle, which may be obviated, by depasturing it with sheep, or by a little caution in having the cattle pretty full, before turned into it, and to take care to put them to it in a dry day. Some object to it, because they have taken a fancy that it impoverishes the soil. Old Ellis says, "*Clover is the mother of corn.*" We believe that, could the Cumberland farmers be induced to make an experiment, they would be of the same opinion, and would find their profits so superior to what they are at present, that they would become converts to the cause. We hope we do not exaggerate when we say, that the profits of red clover for two years, would be double to that derived from the same quantity of ground sown with white clover, rib grass, and hay seeds; and that the profits of the succeeding crop of corn would be nearly in the same ratio.

White Clover, has many advocates, and is certainly a valuable plant, where land is intended to continue in grass for a few years, which is generally the case here; and by those who sow any kind of grass seeds, it is in great repute; it is seldom or never sown alone, but accompanied by what is here called *common hay seeds*, which are in general harmless, from the heat they mostly get in the stacks, and their vegetative powers thereby destroyed: where that is not the case, we fear more weeds than useful plants would be the produce; for when it is considered, that of the useful plants which compose a good meadow, scarce two of them flower and ripen at the same period; and as the time of mowing is governed more by the weather, or other circumstances, than the collection of useful seeds, it may happen, that not one valuable plant may then have its seeds in that state of perfection, which is necessary for the reproduction of its species; at the same time it is probable, that you may obtain the seeds of a few plants, which you would wish to avoid,

Rit.

Rib Grass, is sown in some places where land is intended to continue in grass.

Ray Grass, has here but few advocates; a general prejudice against this plant seems to have taken place, we think *unjustly*, for we are convinced, from long experience, that under proper management, it is a valuable grass; it grows in all soils, and in all situations; early in the spring, and late in autumn; and even through winter, on dry soils and in open weathers: the only reasonable objection we know of, is the great propensity it hath to run to seed, but this may be easily obviated, by eating it bare with cattle, or by mowing the pasture just before it begins to flower, which increases the catage, by the quantity of bottom grass it sends forth after the operation.

It is the properest grass we know of to sow along with red or white clover; and we would beg leave to recommend it instead of *common hay seeds*, so universally sown in this county with clover, both red and white.

MANURES.

Farm Yard Dung, IS here, as in most other places, the chief resource of the farmer: where turnips are grown, it is wholly applied to their culture; where they are not grown, it is used for the various purposes of dressing grass land, and for barley and wheat crops.

Lime, is found in great abundance in many parts of this county, and of an excellent quality. The quantity laid upon an acre varies from sixty to an hundred and fifty bushels; we found it a general opinion, that lime did little good to land that had been long accustomed to it; and that those who had used the large quantity of 150 bushels per acre, found their lands

lands greatly exhausted, and were now fully convinced, of their error in continuing it so long, especially in such large quantities. We have had many opportunities of observing the abuse of lime, which, most probably, is one of the best manures known, for particular soils and situations, and under peculiar circumstances, and proper restrictions ; yet, like many other good things, a superabundance may be prejudicial ; or rather, we are sensible, that too often repeated, and in large quantities, it becomes hurtful.

Lime is mostly laid on, while the land is in a state of fallow ; but in some places, we found it laid upon the grass land, *one* or *two* years before they intended to plough it out. We doubt the propriety of the latter mode.

Tangle, or Sea-Weed, is used along the coast, wherever it can be got ; the quantity per acre is fifty or sixty cart loads. This is known to be a valuable manure either for corn, turnips, or grass, wherever it can be had.

Slake or Mud, left by the tide, is used in the neighbourhood of Ravenslals, with good effect on the grass lands, fifty or sixty cart loads per acre.

Muscles, are also used in the neighbourhood of Ravenslals, for manure, after the rate of five or six cart loads per acre ; they are got on the sands adjoining the coast.

Sea Sand. An accidental experiment of Lord Muncaster's shewed its utility in destroying moss, but it is not used as a manure.

Compost. It seems a general practice through every part of the county, to make a compost of lime and earth in the proportion of one cart load of lime to four or five of earth ; they use it as a top-dressing to their grass lands, and find it very beneficial.

IMPLE-

IMPLEMENTS OF HUSBANDRY.

THE *Plough* of this county is the swing plough, used through all the northern counties, in which we observed no improvement.

To spend time in describing the harrow, roller, &c. that have been used in almost every part of the kingdom for some centuries, would be augmenting this report to little purpose; we shall therefore hasten to

The *Carts*, through the whole of this county, are drawn by a single horse, and probably originated through necessity, from the small farmer keeping no more than one horse. In those times, simplicity and cheapness were only considered. We recollect having seen some of those "*tumble carrs*," without one piece of iron about them; the wheels were made of three pieces of wood, joined by pins of the same material. We suppose they had the name of tumble carrs, from the axle being made fast in the wheels, and the whole turning, or tumbling round together. But this construction has given way to the wheel with a nave and spokes, turning round a fixed axle, which is much more managable, in quick or short turns. *

The advantages of single horse carts are so well understood in this county, that we did not see any other used.

Three single horse carts are driven without any difficulty by a man, or a boy, or even women and girls; along the coast more than half the carts are driven by females, and many of these under twenty years of age, with as fine forms and complexions as ever nature bestowed on the softer sex. We cannot help saying, we were disgusted at seeing them put to this employment; and especially, at their riding in so awkward a manner behind the cart-saddle.

IN-

* The price of a tumble cart is 5l.—the price of the other kind, 7l. ready for yoking.

INCLOSURES.

THE mountainous districts are all open, and most probably will long remain so: the cultivatable parts are a mixture of old inclosures and commons interspersed through every part of the county.

The size of inclosures, in general, is in proportion to the size of farms. The ancient fields are small and irregular; the fences of various constructions; walls, earth mounds, thorns, hazle, and other brush-wood; all lend their aid in a greater or less degree; and, in two or three places, we observed large tracts totally inclosed by whin-fences, * which have a very ragged, slovenly, and uncouth appearance, from the numberless gaps where the whins have been destroyed by frost, an accident to which that plant is very liable. We think nothing but the greatest necessity can justify the use of whin-fences.

The fields of the commons that have been divided within the last thirty years, are laid out in straight lines, and mostly inclosed by quick fences, which in general have done very well.

The Advantages that arise from inclosing, *in respect to increase of produce or value*, must entirely depend upon the modes of management pursued after the inclosing takes place. From the abundant crops produced by land, which has never grown grain before, the occupier vainly thinks that it will always continue to do so; and the deception is still increased, by the stimulating effects of lime. But alas! after having got nine or ten crops, the golden prospect vanishes! the farther they proceed, the more they are convinced of their error; and growing corn having become a losing trade, the land is left to grass: but what can it produce? Already exhausted by repeated corn-crops, and over-dozes of lime, it remains a spectacle

* *Ulex Europæus*. — Furze—Gorse.

tacle of the bad effects of such culture, and a warning to others to avoid the same course. Even under this treatment, the increased value is in the ratio of three or four to one. Had these lands been continued in tillage only three years at one time; the first year oats; second, fallow, turnips, or rape; the third, wheat or oats, or (if the soil suited) barley sown up with clover and ray grass, and depastured with sheep for three, four, or five years, according to circumstances and situations, we will venture to say, the land would have gone on improving, from rotation to rotation; would have been more profitable, and put on a very different aspect to what it does at present, and been worth double to what it now lets for.

The Advantages arising from inclosing of commons, in respect to the *improvement of stock*, is obvious. While in a state of common, every one turns on what he pleases; and there is generally double the quantity of stock that there ought to be. The consequence is, they make no improvement; *they barely exist*; the yearly profits how small! Should an enlightened breeder wish to improve his sheep, how is he to effect it, while his ewes mix promiscuously with his neighbour's flocks? If he had the best tup in the kingdom, can he be sure that one of his ewes would be tupped by him, while there are probably not less than a score of his neighbour's to contest the female with him. On the other hand, if the common were inclosed, every one would stint with that species of stock for which his allotment was best adapted, and in such numbers as would insure profit. When he can confine his ewes within his own inclosure, he can make whatever experiment he pleases, by putting a few, or many ewes, to any particular tup, without any fear or apprehension of having a spurious breed by the interference of his neighbours: he is also enabled to keep his flock from many disorders. Few commons but have some tracts of land liable to the rot: how are they to be prevented from depasturing upon it? or if the scab, or other

E

infectious

infelicious disorders, have taken place amongst any flock on the common, how is he to avoid it?

We cannot conceive, how inclosing of commons can decrease population: unless an increase of corn and cattle, an increased demand for labourers and mechanics of various denominations, tend to decrease mankind, the contrary position must certainly hold good in an eminent degree.

The extent of waste lands, in this county, is very great:---

Of mountainous pasture, 342,000 acres, which we suppose not capable of improvement from the plough; yet many parts of these districts might be applied to planting with considerable advantage, and would probably in this way make a better return than if the soil had been in such a situation as to admit of being converted into tillage. We were glad to see a large plantation of larches thriving exceedingly well, on the steep edge of the west side of Skiddaw, lately planted by Mr. Storey. We hope the example will be speedily, and extensively, followed, by every proprietor of similar situations; but, unfortunately, the greatest part of these districts is in a state of common, and no improvement of this kind can take place while they continue in that situation: of course, the first step to improvement is a division, and for every proprietor to know his own part. If this cannot be done, the only means of improvement then left, is to convert them from unlimited commons to fenced pastures.

The present value per acre, of these mountainous districts, may be nearly estimated from the following data:

Mr. Greenhow, of Thielkeld, takes pasturage for his sheep on Skiddaw forest for a year, at five shillings per score, which is three pence per sheep; and supposing an acre keeps two sheep, then will sixpence an acre be the yearly value of these mountains. They can scarce be in a less productive state; an acre of wood, if it only grew broom-sticks, would pay much better.

Of the Commons, in the less elevated parts of the county, there are many, with large tracts of excellent soil, capable of being improved by judicious culture, proper draining, and improved breeds of sheep, to many times their present value; which is certainly very small, probably not more than from one to two shillings per acre. In a county like this, that does not raise corn sufficient for the consumption of its inhabitants, and where it is always one-fourth or one-fifth dearer than in an adjoining county, it is lamentable to see such extensive tracts of *good corn land* laying waste, of no value to its owners, and of no benefit to the community. Instead of the present scarcity of grain, large quantities might be yearly exported; and instead of the ill formed, poor, starved, meagre animals that depasture the commons at present, an abundant supply of good fat mutton, would be had, to *graze* the markets of the county, and also to send off large supplies to Newcastle, Liverpool, Manchester, and other populous manufacturing places.

It is difficult to say, what would be the increased value of such land, under proper management; we think we cannot be wrong in stating, that it would be at least from six to eight times the value to the proprietors.---But of what advantage would it be to the public?

We have already estimated that there are of improvable Commons in the lower part of the county,	Acres. 150,000
Out of this deduct for bankfides, proper for planting, and other unfertile places,	30,000
There will be left for cultivation,	120,000
Suppose this be put into a rotation of three years tillage, and three years grass, then there will be in tillage yearly,	60,000

Suppose one-third for fallow, and of this, one half to be turnips, the other half naked fallow for wheat, then will there be yearly,

	<i>Acres.</i>	<i>buß. per acre.</i>	<i>buß. per acre.</i>	<i>Price.</i>	<i>val. per acre.</i>
Oats,	10000	at 30s. is	600000	at 2s. pr buß. is	60,000s.
Wheat,	10000	at 30s. is	300000	at 5s. per ditto	50,000
Barley	10000	at 30s. is	300000	at 3s. per ditto	45,000
Turnips,	10000			at 3l. per acre.	30,000
Naked Fallow,	10000				
Total	60000		1100000		£185,000

And suppose the grass land would keep only *one sheep* per acre more, then will there be an increase of 60,000 sheep yearly; the profit of which cannot be valued at less than 14s. each, the amount will be, } 42,000

Total value of increased produce, - - - - £. 227,000

Draining, is one of those improvements which has been introduced of late years into the northern counties; and where it is done with judgment, is, in many situations, of the greatest consequence.—Cumberland has not been behind its neighbours in adopting this beneficial measure. We were glad to observe in many places great advantages gained, both by hollow and surface drains; some done with great art, by one or more hollow drains running in the direction of the outburst of water, and cut deep enough to get through the bed of sand or gravel, in which the water runs, and by that means arrest the source, which drowns the land below it. But the like intelligence has not in all places prevailed, for we often saw the drains running in parallel directions, *perpendicular to the source*, and at such distances, as the drainer thought the nature of the soil required. This is more particularly the case, where surface drains are used. The hollow drains are filled with stones when they can be got, otherwise with sods.

Labour.

Labour. From the number of small farms, there is an uncertainty of a day labourer meeting with constant employment; as the occupiers want assistance only on particular occasions.

On this principle we account for the high wages given in this county; through the whole of which there is an universal custom of giving the labourers *vituals*, both men and women, besides the following wages, viz.

For men, per day, 10*d.* and *vituals*; in harvest, 12*d.* and *vituals*—for women, haymaking, 8*d.* and *vituals*;—harvest, 10*d.* and *vituals*.—The hours from 6 to 6.

The *vituals* are estimated at 8*d.* per day for men, and 6*d.* for women. Servants kept in the house, are only hired for half a year, to prevent their gaining settlements.—Their wages for that time are, a man, 6*l.* to 7*l.* women, 2*l.* to 3*l.*—Masons, without *vituals*, are from 1*s.* 8*d.* to 2*s.* per day; Carpenters, 1*s.* 6*d.*

Provisions. Grain of all kinds is generally very high; the average price last year was,

For wheat,	- - - - -	6 <i>s.</i> 6 <i>d.</i> per bushel.
Barley,	- - - - -	3 <i>s.</i> 8 <i>d.</i> ditto.
Oats,	- - - - -	2 <i>s.</i> 8 <i>d.</i> do.
Butcher's meat, from	-	3 <i>d.</i> to 4 <i>d.</i> per lb.
Butter, from	- - -	6 <i>d.</i> to 8 <i>d.</i> per lb. of 18 oz.

Poultry. A stubble goose, 2*s.* duck 8*d.* a fowl 6*d.* eggs from 3*d.* to 6*d.* per dozen.

Fish.—Salmon, 3½*d.* per lb. trout 3*d.*

We suspect the butcher's meat, through all the markets of the county, is not overloaded with fat: what we saw at Carlisle and Whitehaven was lean indeed!—At the latter place, we did not see one carcass of decent mutton,—the greatest part of it, would not have been suffered to appear in Newcastle, and many other markets, that are accustomed to see good mutton; a joint of lean Whitehaven mutton, is dearer at 3*d.* per lb. than the same joint of a good fat sheep is at 5*d.* on account.

account of the greater proportion of bone to eatable meat, in the former, to what it is in the latter.

Roads, are in general very good, both parochial and turn-pikes, except the road from Carlisle to Newcastle; some parts of which are very bad, and very different to what the same road is, immediately on entering Northumberland.

The materials are excellent; in general lime-stone; but, in almost every instance, not broken small enough by one half. If these hard stones were broke so small, as to pass through a ring two inches in diameter, and the roads made wider, and flat, or very nearly so, few counties in the kingdom would be able to vie with Cumberland for excellent roads.

The Commerce, of this county consists, principally, in the exportation of coals from Whitehaven, Workington, and Maryport, to Ireland, &c. The number of vessels employed in this trade, amounts to upwards of 300, from 60 to 120 tons burden. This lucrative trade, has arisen to its present importance, within the last hundred years; it originated at Whitehaven, from the exertions of Lord Londale's ancestors; to whom the coal in that neighbourhood principally belongs.

Mr. Curwen is the principal coal owner at Workington; and Mr. Senhouse at Maryport.* At all those places, coal cannot be wrought fast enough to supply the demand, vessels having frequently to wait six or eight weeks before they can get a loading; a certain sign of an increasing trade.

The

* This flourishing place, in the year 1752, consisted of only one farm house; in that year another house was built. It is now a neat, well built, middle-sized market-town, with a small and good harbour, inclosed by two piers; and contained last year 3445 inhabitants, which increase about 100 yearly. The ground upon which the town is built, belonged to Humphry Senhouse, Esq. who, to encourage settlers, sold off house and yard steads, reserving a ground rent.—The land around it lets for 2 or 3l. an acre, which would not have been worth more than 1l. had things remained as they were in 1752.

The Manufactures, are not extensive: printing cottons at Carlisle, and a check manufacture (on a small scale) in most of the market towns, with four or five cotton mills, erected of late years near Carlisle, Dalston, and Corby, with a small factory of Corduroys at the latter place, is all this county has to boast of.

Whether the coal trade and manufactures, have occasioned any improvements in the agriculture of the county, is doubtful; but they certainly have encouraged it, by making a very increased demand for its produce.

The lead mines on Aldston-moor affect the agriculture of this county very little, being more intimately connected with Northumberland.

HINTS FOR IMPROVEMENT.

THE first that presents itself, is a reform in the culture of the arable lands. To those who have been accustomed to take two, three, four, five, &c. white crops in succession, we would recommend *never* to take more than *one*; nor *ever* to continue their lands in tillage *more* than *three years at one time*; and in the second year to fallow for turnips, or wheat, according as the soil suits; after turnips, barley; and on the barley or wheat, sow red clover, white clover, and ray-grass; and continue in grass, one, two, or three years, (according to situation and circumstances) where necessity urges. The clover may be mown for hay the first year; but we would recommend to depasture it as much as possible for sheep, which, of all other stocks, are the most profitable, and the most improving, for land that has been exhausted by tillage.

It.

It would probably be right in most situations, to have one-third or one fourth of the farm in old grass, for the purposes of the dairy, and the sheep stock in winter, and we would observe, that where land is worth 40s. per acre, in grass, it would be a dangerous experiment to plough it up in such a climate as Cumberland possesses.

We know that in some parts of the kingdom, lands are let at higher rents, for the *purposes of tillage only*; but then, their soil, climate, and situation, are peculiarly good; and it is a question, whether, if these lands had been in old grass, they would not have been worth more for grazing, than they are at present for growing corn; probably as good as the land at Pap Castle, let at 3l. an acre, for grazing only.

The Stock, next offers itself for consideration. Of the purest breed of horses, and horned cattle, we have before given our sentiments: it only remains to suggest, what improvement may be made in the sheep; of which there ought to be, at least *two*, if not *three*, distinct breeds; that is,

For the lower districts, a breed of *improved* long-woolled sheep:

For the mountainous, a breed of mountain sheep, adapted to the *herbage* and *situation*.

For the high, heathy ridge of mountains on the east side of the county, the *true black-faced heath sheep* are probably the best adapted; as we think them the hardiest, and best calculated, for living *altogether upon heath*, of any other breed we know;* of course a little attention to the improvement of the present breed, by good tups, of the *true heath sheep*, is all that is here wanted.—But for those mountains, on the south west part of the county, which have so large a proportion of sound green sward, we think a fine woolled sheep might be kept

* Many of the farmers, on the East borders, at the same time assert, that their sheep, now known under the name of the *Cheviot Breed*, are equally hardy and well calculated for a mountainous district, and much more profitable.

kept to advantage; probably the South Down sheep might do very well; or at least, a cross betwixt the *South Down* and the *Herdwick sheep*; from the known inclination these breeds have to make fat, the carcass would certainly be as good, and the fleece would as certainly be of *double value*, as that of the present breed.

The fleece of the South Down sheep is $2\frac{1}{2}$ lb. at 2s.

per lb.	-	-	-	-	0	5	0
Ditto, of the Skiddaw sheep, $3\frac{1}{2}$ lb. at 5s. ditto,					0	1	6

Increased value of the fleece,	-	-	-	£.	0	3	6
--------------------------------	---	---	---	----	---	---	---

But it is probable, the wool may be deteriorated, by crossing with the Herdwick sheep. If on this account we allow 1s. 6d. there will still be an increased value of 2s. a fleece.

For the lower districts, a breed of *improved* long-woolled sheep, of 18 or 20 lb. a quarter, would undoubtedly be far more profitable, than those that are now bred, and depastured upon it; and from the great portion of excellent turnip soil, distributed through every part of the county, almost every breeder would be enabled to fatten his own, if he pursued the rotation above recommended; and he would find, that his wethers at $1\frac{1}{4}$ or $1\frac{1}{2}$ year old, would be much fatter than the present breed are at 4 or $4\frac{1}{2}$ years old; and that they would be fold for the following prices:

					L.	S.	D.
A wether at $1\frac{1}{2}$ year old,	-	-	-	-	1	5	0
Wool, 1 fleece 8 lb. at 9d. per lb.	-	-	-	-	0	6	0

	£.	1	11	0
--	----	---	----	---

Deduct for wintering on turnips 20 weeks at 3d. per week,	}	0	5	0

Produce of a long-woolled wether at $1\frac{1}{2}$ year old, after deducting the expence of wintering on turnips,	}	1	6	0

F

At

At Aspatria they feed their own sheep, and sell	}	l. s. d.
their wethers at $4\frac{1}{2}$ years old to the butchers for		1 0 0
Wool, 4 fleeces, at 2s. 6d. each, - - - - -		0 6 0

Produce of a country bred wether $4\frac{1}{2}$ years old, £. 1 6 0

The expence of salving 4 years, &c. is not taken into the account, nor deducted.

From hence it appears, that the present breed of sheep are kept three years for nothing, or that the improved breed of long-woolled sheep will leave as much profit in one year, as the present breed do in four; or a flock of 25 of these long-woolled sheep, would leave as much profit as 100 of the present race, and that for grafs only, as the expence of wintering on turnips was deducted in the above statement.

We have already pointed out, that *inclosing of commons* would be a great source of improvement in this county, could it be done at a moderate expence, and on equitable terms; the charges of obtaining an act of parliament, and the various additions made thereto, by the ingenuity of the practitioners of the law, are in some cases three or four times more than all the other expences put together. Surely this might be avoided by a general act. The House of Commons has already laid a foundation by the standing orders respecting such bills.—If two thirds of the proprietors request a division, we see no reason why they should be put to the expence of obtaining an act of parliament, because two or three, or possibly *only one*, ignorant or ill natured person or persons are absurd enough to oppose it.

Another great source of wealth might be derived from *watered meadows*.—The only attempts we saw of this species of improvement, that had the least resemblance to a watered meadow laid out by art, was at Blettarn (about six miles east of Carlisle)

Carlisle) belonging to Mr. Richardson of Rickerby, to whom his country is highly indebted, for the spirited example he has set in many other improvements. We were sorry to find, there was little more water than what was collected by rains; the ridges narrow and long; the trenches small, and inadequate to carry a sufficient quantity of water, for the purpose intended. It is unfortunate, that the first attempt should have been made in such a situation, and under such circumstances, in a county so pregnant with favourable situations, and the water of such an excellent quality, uncontaminated with mineral particles, or infusions that are suspected to be inimical to vegetation. The streams are not confined to any particular district: they are found equally pure, whether they have their source, from the Limestone rocks on the eastern and middle parts of the county; or from the immense mountains of blue slate rock, in the south west district. Numberless are the rivulets that might be employed with the greatest advantage in watering, and in most places would be turned over the land at the least expence; being obliged, at present, to be kept within their bounds by proper fences; and seem to solicit their indolent owners to employ them, for their own emolument, and the benefit of the public.

There are also many fine opportunities for employing the large rivers; many hundred acres of the flat tract of land below Kefwick, to the top of Bassenthwaite-lake, might be irrigated, and prevented from being overflowed by embanking; a large portion near the foot of the lake is capable of the same improvement. In Eskdale, Lord Muncaster has a fine opportunity of watering an extensive tract---near Carlton, on the Petteril, on the Ellen, and at many other places, we observed, where irrigation might be applied to great advantage.

We made an excursion to the bishop of Landaff's, at Colgarth Park, where that respectable prelate has a most admirable situation for watering.—He purposes to have a man from those parts where the practice is best understood; a plan we

highly approve ; and from his known scientific knowledge, enlarged ideas, activity, and perseverance in every good pursuit, we have no hesitation in saying, that future improvers will revere his memory, and admire the man, for adding to the character of a *good bishop*, that of a *good farmer* ; and for blessing these northern regions, by the introduction of a practice, from which so many, and such great benefits, are to result.— To this place, we hope, the Cumbrians will resort, to be taught the most improved modes of irrigation, and by introducing the practice into their own country, will reap the rewards which it is so highly capable of affording, from this source of improvement.

We believe, great advantages might be gained by embanking ; especially on the marshes of Burgh, Rowcliff, Abbey Holm, and at the mouth of the Duddon. To point out the mode by which this could be best accomplished, would require a more particular survey ; it is sufficient, on this occasion, to hint, that it may be done, and that great advantages would accrue from it, not only to many individuals, but to the public at large.

OBSTACLES TO IMPROVEMENT.

ONE great obstacle to improvement, seems to arise, from a laudable anxiety in the customary tenants, to have their little patrimony descend to their children. These small properties (loaded with fines, heriots and boon days, joined to the necessary expence of bringing up and educating a numerous family) can only be handed down, from father to son, by the utmost thrift, hard labour, and penurious living ; and every little saving being hoarded up for the payment of the *eventful fine*, leaves nothing for the expences of travelling, to see improved modes of culture ; and to gain a knowledge of the management and profits of different breeds of stock ; and be convinced,

convinced, by ocular proofs, that their own situations are capable of producing similar advantages. And even should they be half inclined to adopt a new practice, prudence whispers, that, should the experiment fail, it would require the savings of many years to make good the deficiency.

The *customary tenure* is allowed, on all hands, to be a great grievance and check to improvement. Would not this be best done away on the division of commons, as was the case at Brampton, &c. where Lord Carlisle had 1-12th for his consent as Lord of the soil, and for enfranchising the allotments. There are other Lords who ask 1-4th for their consent and enfranchising. † The yearly value of the various customs, fines, &c. might be easily settled by commissioners; and twenty-five years purchase, on *this value*, be the price of enfranchisement, which might be allowed out of the allotment, upon the division of a common; or paid in money, at the option of the tenant.

On these terms, neither party would have reason to complain; but where a tenant cannot enfranchise, under forty years purchase, it would be a humane act of the Legislature to relieve these bondagers by law, or laudable in the Board of Agriculture, to induce such lords of manors, to accept a fair equivalent, for these dregs of vassalage.

Letting no Leases, or leases for five or seven years, is another great obstacle to improvement. To such proprietors of land we would beg leave to hint, that no tenant will ever make improvements under the uncertainties of a *short lease*, much less where there is *none*. A tenant may be well convinced, that by proper culture, draining, improved breeds of stock, &c. he could make his farm, in a few years, worth *one third* more than it is at present; but this cannot be done without
laying

† The portion given to the lords of manors, for their consent as lord of the soil, in most parts of the kingdom, is one-sixteenth. The part to be allowed for enfranchising will depend on the nature of the tenure.

laying out money: suppose 100*l.* and suppose, by this means, the increased yearly value of his crop is 20*l.* Now it is clear, it will be six years before he can be repaid the principal and interest of the sum expended. Should his lease expire in the fifth year, he would be a loser; and should he have no lease, he might be turned off his farm at the end of the second year. Under such circumstances, the chance of loss is much greater than the prospect of gain. By reasoning in this manner, he concludes, that it is safer to have his 100*l.* at interest at 5 *per cent.* than risque it in improving his farm under such uncertainties; and that it will be the surest game to take *every advantage* of the farm in his power.

On the other hand, if his lease had been for twenty-one years, he would have foreseen, that, by laying out this 100*l.* he would gain 200*l.* and, as "the hope of reward sweetens labour," he would have doubled his exertions, and gone on from improvement to improvement; that, at the expiration of his term, his landlord would have the satisfaction of seeing his tenant having acquired a competency, his farm increased in value at least one-third, and the community benefited by the increased produce. We have heard, it is true, some arguments urged in favour of letting *no leases*, which, we are persuaded, cannot long take hold of any liberal and benevolent mind, enlightened by science, or anxious to promote the true interests of the country.

It seems to be universally agreed, that the *payment of tithes in kind*, is a material obstacle to the advancement of agriculture. According to the present mode of collecting this tax, it is not a tenth of the *natural produce* of the land; but a tenth of the *capital employed in trade*. If a man employs 100*l.* in trade, he receives his profits, without any deduction; but if he should lay out this 100*l.* on a speculation of improving a piece of land, (say, draining a bog) he finds, if his scheme succeeds, that the produce is not all his own; the tithe owner comes, and takes away *one tenth*, (which is probably *all the profit*,

profit, after deducting common interest for the money expended); and this, from off land that never afforded any tithe since the creation, nor *ever would have done*, had not this spirited improver, laid out his 100*l.* on improving this bog, rather than employing it in trade, where he could have received at least 10 per cent for his money. The bog would then have continued unprofitable, and the tithe owner would have received *no injury*; for neither he, nor any of his predecessors, had ever reaped any advantage from it. This obstacle certainly might be removed, by giving a fair equivalent for tithes; the value of which ought to be estimated, from what the land would produce, without any aid of foreign manure, or extra expences of the nature above stated.

MISCELLANEOUS OBSERVATIONS.

THE practice of using single horse carts, we would recommend to the notice of other countries; we have long been convinced of their utility, and are happy in having an opportunity of stating to the public a few facts, which will fully evince their superior advantages.

The horses of Cumberland are not of a large size, one fifteen hands high, of a light form, that will answer either for riding or drawing, seldom draws less in a single horse cart than

12 CWT.

The common load for a *draft horse* of the above }
size, - - - - - } 15

The carriers from Brampton to Newcastle, over }
a hilly country, carry frequently, - - - } 18

We

CWT.

We met a boy (eighteen years old), a carrier
from Longtown to Newcastle, *driving five*
carts, in which were four ton on each cart, } 16

A single horse cart carries ten piggs of lead, of }
twelve stone each, which is - - - } 15

From the above it may be fairly concluded, that the common load for a single horse cart, will be about 15 cwt.

In most countries, a two horse cart seldom carries more than, - - - } 20 cwt.

Nor a three horse cart more than, - - - } 30

Here a boy or a girl drives two single horse carts, and carry - - - } 30

Of course, *two horses*, yoked in *single horse carts*, will draw as much as *three horses* yoked in *one cart*.

A common carrier at Carlisle, who many years employed a waggon, has laid it aside, and now uses *single horse carts only*; as he finds, he can, by that means, carry much greater weights.

The superior goodness of the roads in Cumberland may, in a great measure, be attributed to the universal use of single horse carts. Wherever waggons are used, they are the destruction of roads, especially in hilly countries, where they are obliged to lock the wheels; the banks are in a manner ploughed up with them, and the nine inch wheels are, in reality, no more than three inch wheels, by the artful mode of laying on the middle course of tyre, which is raised an inch above the rest; instead of being nearly exempted from tolls, every *horse* drawing in a *waggon*, ought to pay *treble* to what should be exacted from a *horse* drawing in a *single horse cart*. Of what use are waggons? (except to destroy the roads?) it is clear, that the same number of horses yoked in single horse carts,

carts, will draw more than when yoked six or eight together ; single horse carts are easier loaded and unloaded, are much more handy, for almost every purpose ; and six or eight may be driven by a man and a boy, which is a trifling additional expence. If a middle sized Cumberland horse draws 15 cwt. a large strong waggon horse will as easily draw 20 cwt. and which, we know, is done in some parts of the kingdom.

Our veracity may probably be called in question, when we assert, that we scarce ever saw a mole-hill in the inclosed grounds of most parts of Cumberland. On inquiry, we found, they had a most excellent practice, for every parish to let the destroying of their moles, for a *term of years*, at a certain yearly sum ; which is raised in the same manner as the parochial taxes, and does not now exceed a halfpenny an acre ; which, they justly observe, was much cheaper than they could have the ground *sealed for*, were the moles not destroyed in this manner. It is a pity, but there was a *law* to oblige every parish in the kingdom, to destroy their moles in the same manner. And probably it would be right to have some similar mode for destroying rats, so great a nuisance to the farmer.

The best mode of improving black peat earth, being a desideratum of great consequence, the more facts that can be collected upon this head, the more likely to obtain the object sought for.

At Blettern, Mr Richardson has made great improvement, on a poor black moory soil, growing very short heath ; in its original state, not worth sixpence per acre, probably not three-pence. He ploughs in autumn, and lets it lie till the autumn following ; then ploughs across ; and the next summer makes a complete fallow, which he limes, after the rate of two hundred bushels per acre ; and in April or May following, sows.

G

it.

it with grafs seeds, (without corn) in the following proportions :

			L.	s.	D.
White clover,	-	6l. per acre,	-	0	4 0
Red ditto,	-	3l. ditto,	-	0	1 6
Rib grafs,	-	6l. ditto,	-	0	2 0
Ray grafs,	-	3 Bushels per acre,	0	10	6
Common hay seed,	18	ditto,	-	0	18 0

Expence per acre of grafs seeds,	-	£.	1	16	0
----------------------------------	---	----	---	----	---

On a part of the fallow, this year, we saw some drilled turnips, worth 3l. an acre : in addition to the lime, they had fifty single cart horse load of dung per acre. We think, that a crop of rape might be got for spring feed, without dung, which would certainly be better than a naked fallow. The lands that have been laid down two years were full of grafs, and excellent pasture for sheep ; but to make them thus productive, they are loaded with the following expences :

			L.	s.	D.
Eight ploughings at five shillings per acre,	-	2	0	0	
Harrowings,	-	0	4	0	
Lime, 200 bushels, and leading,	-	5	0	0	
Grafs seeds,	-	1	16	0	

Total expence per acre,	-	£.	9	0	0
-------------------------	---	----	---	---	---

Near Naward Castle, Mr. Ramshay has made great exertions in reclaiming peat-mofs, *by throwing it up with a spade* into round ridges seven yards wide ; the top being from twelve to eighteen inches higher than the furrow, which is

cut deep enough to act as an open drain. In this state it lies all winter: in the spring following, he covers it near an inch thick, with a compost, formed of five load of earth to one of lime; and, upon this dressing, sows,

Common hay-seeds, 12 bushels per acre.

Ray-grafs, - 2lb. ditto.

Rib-grafs, - 2 or 3lb. ditto.

Where the land is dry enough, they plough; and, to the above quantity of grafs-seeds, add a few pounds of white clover.

Mr. Ramshay uses few hollow drains. Those that require to be three or four feet deep, he slopes off at the sides, into which the furrow drains empty. We saw some lands that had been done two years; the ray-grafs and rib-grafs growing well; the woolly holcus (*holcus lanatus*) in abundance: it comes naturally on all such soils; but is a grafs that few kinds of stock will eat, unless compelled by hunger.

Mr. Ramshay informed us, the expences of making these improvements amounted to 10l. an acre.

The best account we could obtain of commons, divided by act of parliament, were,

Sowerby, about 25 years since.

Sedbergeham, about 30 years since.

Stainton, - 20

Culgaith, - 20

Carlton, - 15

Skelton, - ---

Brampton, - } 14

Irthington, - }

Newby, - }

Farlam, - 12

At the four last places, the lord of the manor had 1-12th for his consent as lord of the soil, and making the allotments freehold: at most of the others the lord had 1-8th.

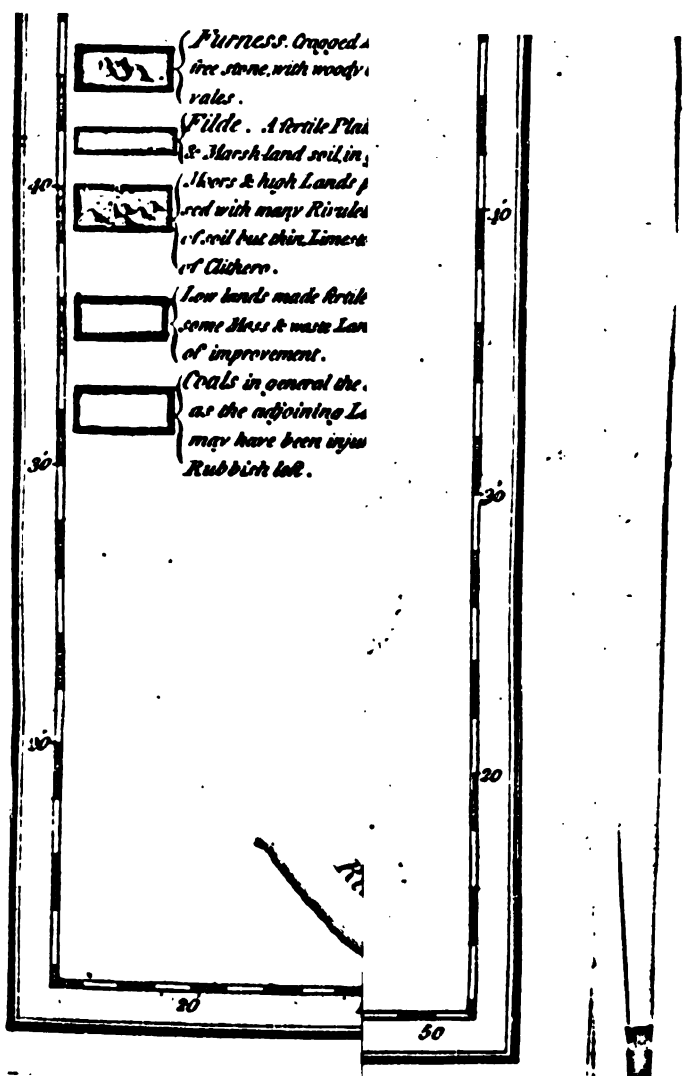
7

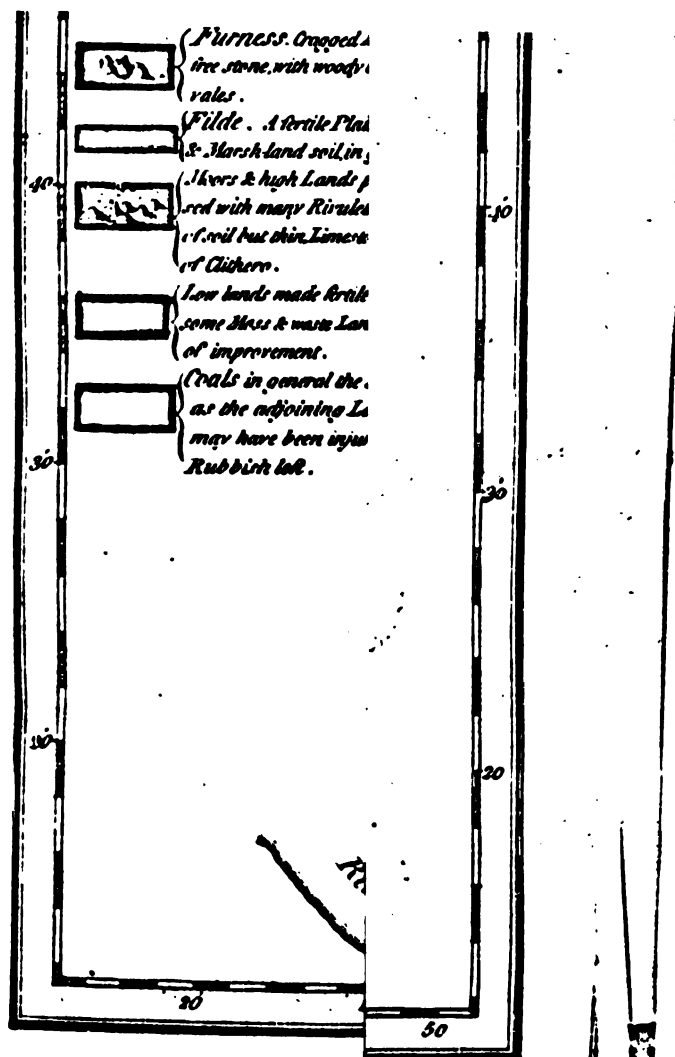
GENERAL VIEW
OF THE
AGRICULTURE
OF THE COUNTY OF
LANCASTER.

7

G E N E R A L V I E W
OF THE
A G R I C U L T U R E
OF THE COUNTY OF
L A N C A S T E R.

1





(

]

5

GENERAL VIEW
OF THE
AGRICULTURE
OF THE COUNTY OF
LANCASTER.

WITH OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

By JOHN HOLT,
OF WALTON NEAR LIVERPOOL.

Gt. Brit.

LAYN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE
AND INTERNAL IMPROVEMENT.

LONDON:
PRINTED BY J. NICHOLS.
M.DCC.XCIV.

MF W

S455
A2
v.6
no.5

TO THE READER.

IT is requested that this paper, may be returned to the Board of Agriculture, at its office in London, with any additional remarks and observations which may occur on the perusal, *written on the margin*, as soon as may be convenient.

It is hardly necessary to add, that this report, is, at present, printed and circulated, for the purpose merely of procuring farther information, respecting the husbandry of this district, and of enabling every one, to contribute his mite, to the improvement of the country.

The Board has adopted the same plan, in regard to all the other counties in the united kingdom; and will be happy to give every assistance in its power, to any person who may be desirous of improving his breed of cattle, sheep, &c. or of trying any useful experiment in husbandry.

LONDON, FEB. 1794.

LANCASHIRE.

LANCASHIRE is a maritime county, the western part of which is bounded by St. George's Channel, and the Irish Sea; according to Gough it is 80 miles from North to South; 32 from East to West; 200 miles in circumference and contains 1,150,000 acres, 40,000 houses, and 240,000 inhabitants*.

According to Cary, this county is 73 miles long, 41 broad, and 290 in circumference; containing 1,700 square miles, or 1,088,000 acres, (which are divided into 61 parishes†), and 26 market towns.

* But the population, now, must be much more considerable, and Dr. Wilkinson, an inhabitant of Essex, but who is a native of this county, and has several estates in it, particularly Morley-hall, near Leigh, the place whence the celebrated Leland took some of his distances, and who was a relation to a former possessor, a well-informed man, seemed to think, that Lancashire contained as many inhabitants as the county of Middlesex, which he estimated at about a million. In a circle of 3 miles around Tidesley, Thomas Johnson, Esq. informed the surveyor there were 10,000 weavers.

† Liverpool was made an additional parish, and separated from Walton, the latter of the last century. Croston has been divided into three parishes by an act obtained for that purpose the last session, for the general benefit of the people, each to have a church on a similar footing, and the livings to be the same.

But the true dimensions of the county are as follows * ; its greatest length 74 miles, breadth $44\frac{1}{2}$ miles. Its circumference (crossing the Ribble, at Netheth Bank) 342 miles, containing 1765 square miles, and 1,129,600 statute acres.—Total number of parishes, with the additional ones, 62.

The shape of the county of Lancaster is somewhat similar to that of England, Wales, and part of Scotland ; *e. g.* suppose beyond the sands represent part of Scotland ; the river Loxne, and the inlet which runs up to Cocherham, the rivers Mersey and Die ; that tract called the Filde, the principality of Wales ; the Ribble, Brittol Channel, and the Severn ; and, again, the river Mersey, the southern boundary of Cority, by the English Channel, the southern boundary of the kingdom. The indentures upon the Eastern parts of the county have a strong similarity with the indentures of the eastern part of the kingdom.

The ridge of mountains, which bounds this county on the eastern side, from Yorkshire, and which runs through not only Yorkshire, but Cheshire, Derbyshire, and Staffordshire, &c. and called, not improperly, the Back-bone of the kingdom, being the most elevated ground on the island, screens Lancashire more particularly from the ungenial eastern blast, the frosts, blights, and insects, which infest the countries, bordering upon the German ocean ; and though the high mountains may cause a greater quantity of rain to fall in this district, as appears by rain-gauges kept for that purpose, than in the more interior parts of the kingdom ; yet this county, fanned with the Western gales, or North-West breezes, has a salubrity of air or atmosphere, to which may be attributed the

* Calculated upon this occasion by Mr. William Yates, who surveyed and published a map of the county of Lancaster in the year 1786.

vigour and activity of the inhabitants, who are, if temperate, generally long-lived. The saline particles, with which the westerly winds are loaded, may also not a little contribute to the verdure of the fields. Snow continues but a short space of time here upon the ground, perhaps, owing to the state of the air from the above cause.

Lancashire has some local advantages, which have been the cause of rendering the county so famous for its manufactures. These in a great measure depend upon the two most material articles of coal and water; the former of which lies in immense beds towards the Southern and middle part *, and the many rivers, &c. which in so many places intersect the county, together, with the springs, have together had no small effect upon the agriculture of this district, as will be seen hereafter. The Northern, and North-East districts, produce lime-stone † in abundance, but no calcareous matter but marle is found towards the South; a small quantity of lime-stone pebble upon the banks of the River Mersey excepted.

Besides water and coal, this county also produces stone, of various denominations. Near Lancaster (upon the common) is an extensive quarry of excellent free-stone, which admits of a fine polish. The county town (Lancaster) is built wholly of this stone, which, for its neatness, is excelled by few towns in the kingdom. Flaggs and grey slates are dug up at Holland, near Wigan. Blue slates are

* Coals have not been found, as it is said, farther north in the county than Chorley and Colne (a). The next bed of that useful article, after a long space appears again in immense quantities at Welchoven and Newcastle-upon-Tyne. The cannel (a species of coal resembling black marble) lies chiefly at Haigh, near Wigan, and occupies a space, as it is said, of about four miles square.

† Near Leigh is found lime of a peculiar quality, which resists the effects of water, and is therefore applied to the construction of cisterns to hold water, and mortar for building under water.

(a) See the map.—There is said to be a hundred about Hornby.

got in large quantities in the mountains, called Conistone, and Telberthwaite fells, near Hawkshead. Great quantities are exported. They are chiefly distinguished into three classes, viz. London, country, and *tan* slate, which are valued in proportion, London best, &c. Copper mines in the North have been worked, but without much success. The best scythe-stones are obtained at Rainford, well wrought on the spot. Iron ore, in large quantities, is obtained near Lindle, between Ulverstone and Dalton, in Low Furness.

The features of this county are, in many places, strongly marked; towards the North they are bold and picturesque, diversified with alpine mountains and fertile vales. The North-East part of the county, Blackburn, Clithero, Haslingden, &c. is rugged, interspersed with many rivulets, with a thin stratum of upper soil; the southern part more softened, and the plains more fertilized: along the sea coast, the land is chiefly flat, and has the appearance, in many places, as if formerly covered by the ocean.

S O I L.

Few countries produce greater varieties of soil, which yet does not change so rapidly as in some others.

The greatest proportion of that district, which lies between the Ribble and the Mersey, has for its superficies a sandy loam, well adapted to the production of almost every vegetable that has yet been brought under cultivation, and that to a degree, which renders it impossible to estimate, the advantage which might be obtained, by improved and
superior

superior management. The substratum of this soil is generally the red rock, or clay-marl. There is also a black sandy loam, something distinct from the above description, which has no red rock, but the substratum white sand, under which is clay and then marle. There are also tracks of white sand lands, and some little, pebbly-gravel lands. There are many large tracts which come under the denomination of *mosses*, and some stiff, but no obdurate clay lands.

There is a kind of land which throws up great quantities of rush, not owing to springs, but to a thin stratum of surface soil, under which lies a bed of matter, principally composed of clay, which does not admit the water to penetrate; therefore, the upper surface, or soil, is kept in a continual spongy state (if not surface drained) and produces rushes and other sour grasses.

Marle has a good effect upon these lands; for, besides its usual qualities, it renders the soil stiffer, and enables it to resist and throw off the surface water more effectually.

Moor lands which are in a state of nature, and produce heath, and other wild plants, are of various qualities and different natures, being very extensive indeed, and much more so than might have been expected in a county so populous, and consequently where lands must be so valuable.

There are distinctions, or names of soil, not necessary, perhaps, on this occasion, to particularize more minutely than, that the vales are in general fertile, but have less of that quality as they approach nearer to the higher lands. Many lands are liable to be overflowed, and their crops swept away by the floods; great exertions have been made in opening the course of the river ALY, and some thousand pounds been expended in that work, and the water has been thereby kept within narrower bounds, and of consequence the produce of the earth has been better preserved.

to the laborious cultivator. Embankments have also been made, where the river empties itself; but the soil gained has been claimed by the Lord of the Manor:

Much of this kind of work yet remains to be done; but, like many other good things under contemplation, has hitherto been prevented by diversity of opinion, or the clashing of different interests.

Property. Since the introduction of manufactures, property has become more minutely divided. But there remain proprietors who still hold very extensive possessions.

The remark made by Camden, in his *Britannia*, of the number of ancient families, bearing the names of the places where they reside, and whence they took their names, is still applicable to this county, *e. g.* Atherton, Bold, Fazakerley, Formby, Hulton, Mawdsley, Townly, Trafford, &c.

The yeomanry, formerly numerous and respectable, have greatly diminished of late, but are not yet extinct; the great wealth which has in many instances been so rapidly acquired by some of their neighbours, and probably heretofore dependants, has offered sufficient temptation to venture their property in trade, in order that they might keep pace with these fortunate adventurers.

In most townships * there is one farm, still distinguished by the name of the Old Hall, or Manor House (the residence formerly of the great proprietor of that district) which is of larger extent than any of the adjoining or neighbouring farms. Few of these farms, however, exceed 600 statute acres; many do not extend to the amount of 200. But the more general size of farms is from 50, 40, 30, down to 20 acres apiece; or even so much as will keep a

* The parishes of Lancashire are again subdivided into townships.

horse or cow only; or one of these, as is most convenient.

Although there is a mixture of arable, and grass land, yet the latter, from the above statement, must greatly preponderate, and that to such a degree, that it has been frequently asserted, that the corn raised in Lancashire, would not support the inhabitants more than 3 months in the year, so that the cheapest way of obtaining corn, is to purchase it at other markets.

The lands in the immediate vicinity of the great towns, are chiefly employed in pasturage; at a remoter distance, in pasturage and meadow, immense quantities of hay being requisite for the number of horses and cows kept therein. Near some places, such as Bolton *, besides the demand for lands under hay and grass, a great number of acres are occupied as bleaching grounds; and throughout the whole of the county, there are, in different places, many acres of rich land, covered with yarn, or cloth, under various operations.

These several causes have had a tendency to change the system of the agriculture of the county, and to convert the arable grounds into grass lands; and this system of management seems yearly increasing, even in those parts which were formerly considered as the great corn districts; such as that fertile soil under the denomination of the Fildes, a tract of land from the North of the Ribble, along the coast

* In the neighbourhood of Bolton, bleaching of the very best quality in the kingdom is performed; and there is as much ingenuity displayed amongst the artificers, in Bolton, and its neighbourhood, as in any part of the county. Bolton has been long celebrated.

"Bolton upon Moore Market stoneth most by cottons and cawrie yorne. Divers villages in the Moores abowte Bolton do make cottons. Nather the scite nor ground aboute Bolton is so good as at Byri. They burne at Bolton sum canale, but more se cole, of the wich the pittes be not far of. They burne turfe also." *Leland's Itinerary*, v. vii. p. 49.

as far as Cocker-Sands, to the turnpike road on the East.

It is true that cheese * may be imported; but milk must be raised nearly upon the spot where it is consumed, and fresh-butter does not improve by carriage. Milk is the cheapest food, and probably the healthiest, that can at this day be purchased. It is no wonder then that the demand for this article should be great in this populous country, and near the great towns—upon this occasion it may be proper to say something upon the present system of,

Cow-Keeping. The cows kept in the neighbourhood of Liverpool, and within the compass of 6 miles, are, after supplying the family, principally for the purpose of furnishing the Liverpool market with milk and butter †.

* There is much cheese made in this county; and also, of excellent quality; in many respects equal to the Cheshire, in some superior. The cheese made in the vicinity of Leigh, Newborough, &c. for its mildness and rich flavour always bears an advanced price at market (a); and it is somewhat remarkable that the very best dairy (as is usually reckoned) is the very worst land; the soil not being above 3 or 3 inches deep (b). Superior, if only on the following account—the Lancashire cheese is free from that mixture of colouring matter, which, through the artifice of factors, or the folly of the consumers, particularly those of the metropolis, is, contrary to the inclination and better judgment of the Cheshire dairy-women, infused into the milk. Nay, the factor not only refuses to purchase, but supplies the anette at his own expence, with this drug, which, instead of adding the least benefit, is known to injure the good quality of the cheese: such is at present the insatiating folly of fashion.

† A few farmers there are that do not carry their milk to market, but dispose of it at home.

‡ Butter-milk is an article of food throughout the greatest part of this county. When made into porridge, and thickened with a little oat meal, and sweetened with treacle, it becomes an agreeable, nourishing, wholesome, and cheap food: the sweet, mixed with the acid of the milk, makes it very pleasant; mixed with water it is rendered a good beverage at meals, cool, refreshing, and quenching in summer. It is sometimes mixed with butter, and thus used to potatoes.

(a) About 10s per cwt.

(b) The Lands in West Leigh and West Houghton.

There

There is milk, it is true, brought to town * from a considerable greater distance (10 miles) but the general distance seems no more than what is above stated. In the town of Liverpool alone, there are a considerable number of cows kept, to the amount of 5 or 600. A single field, for an outlet in the day-time, is procured at a very advanced rate; but the principal food is hay, and grains from the breweries.

Those who are supposed to follow the best system of management, with a proper capital, seldom keep the same cow more than one calf, except some particular favourite. They are purchased at the time of calving, and the calf is immediately sold to feeders for the market, who generally reside in Worrall Hundred, Cheshire, and who keep cows for that purpose, and dispose of their milk and gets a livelihood that way. The cows, when they fail of yielding a certain quantity of milk (about 6 quarts *per* day) are, if in proper condition, disposed of to the butcher; and, if properly kept, to advantage, *i. e.* for more than the first cost †. All the cowkeepers do not follow this good practice; and some who regularly change their cows, do it frequently at the loss of two guineas *per* head.

The

* The conveyance of milk has of late years been in wooden vessels in carts, instead of the backs of horses, as formerly. One horse can convey a greater quantity in a cart, with more ease, than on his back, besides affording more comfortable accommodations to the good woman, who also can carry along with her milk some little garden-stuff, according to the season of the year; and there are but few milk-carriers that do not take a few greens, &c. from their gardens, which they can dispose of amongst their customers, whilst they are selling off their milk. Of late these milk-carts have been covered with painted canvases upon hoops, affording a very good screen from the severity of the weather.

† One Mayo, who has a milk farm upon this estate of T. Butterworth Bayley, Esq. of Hope, near Manchester, informed us, that he generally sold his stock off to the butcher, at an advance of two guineas more than the original purchase. But his landlord has furnished him with the greatest con-

The Liverpool cowkeeper does not aim to make butter; his system is, to sell milk and cream; but in the summer season, when milk flows into the town from many quarters, a market sufficient to take off the whole, may not always be found, and then he is under a necessity of churning it, and making butter, or disposing of it in cheese, or some other way: but the consumption of milk and cream is universal; and to these two articles his greatest attention is directed.

A good cow should give daily 12 quarts, and the price of cream is generally 14*d.* *per* quart; new milk 2*d.* *per* quart, and inferior milk 1*d.* *per* quart*. A Cow stands the keeper in about 1*s.* *per* day, for food, attention, &c. so that with contingencies and losses that frequently happen to the stock, there is but barely a living profit † left to a business,

conveniences, and the completest farm-yard observed in this survey (u), from which he has profited, and merits praise for his great industry and excellent system, which is to feed them with the choicest hay, and opening food in winter; tempting their appetites, by offering his cows only small quantities at once, but this is frequently repeated; and during the season they are upon grass, they eat grains, ground or bruised in a mill, of such different kinds as can best be purchased; a very small portion of time is employed in grazing, for being well supplied in the stalls, and from the luxuriant rich grass in the fields, they lie at their ease and ruminate. Mayo generally keeps his cows about 18 months, and contrives to sell off in the Spring, when beef is at the dearest.

* Dearer at Manchester market a trifle; probably the quality may be superior.

† In calculations we too frequently find that no allowance is made for contingencies, or falling off of quantity. Twelve quarts *per* day is the prime milking quantity; and though some cows may have given more at the first, these kind of stock more rapidly fall off in quantity, whilst, at the same time, the quality was of less value, in proportion to the excess of quantity.

(u) Among other conveniences, a stream of fine water runs through the yard, and by opening a cock, he can throw a stream through the cow-house, to wash away the dung, &c. left after emptying, and this water is obtained by draining the higher lying lands.

which

which requires much attention, and not a little skill in purchase and management.

The system at Manchester, is nearly the same as at Liverpool, (see the preceding note upon Mayo's good management) : it does not, however, appear, that so many cows are kept within that town, it being supplied by a whole circle of surrounding country, whereas Liverpool has only half the quantity of land, from its maritime situation. The price of labour too, about Manchester, is such, that the milk passes through the hands of retailers, who buy it wholesale from the farmers,—who carry it generally upon horses (carts not being yet altogether adopted there) and whose servant, upon discharging his load, can immediately return and become useful at home.

In the neighbourhood of the large towns, there is also a portion of land appropriated to gardens.

It is generally believed, that there is not a town in the kingdom, London excepted, better provided with vegetables, roots, &c. than the town of Liverpool*.

Beside the vegetables brought in by the milk-carts before-mentioned, and which really amount to a considerable quantity, there is a certain farm in Kirkby, about eight miles North East from Liverpool, the soil of a small part of which is a black loamy sand, and which produces great quantities of early, and strong, asparagus ; and another farm, a part of which is of the same nature,

* There are generally some reasons for distinguished superiority ; and it has been said, that the French neutrals (who were brought over from Canada in the war of 1756, and who resided some years in Liverpool) required so many vegetables in their soups, &c. as to raise the market price of these articles, which excited a spirit of growing greater quantities than had before been usually done. As a sea port, the quantities of cabbage, and other vegetables, taken out for the use of shipping—the quantities of dried herbs carried to Africa ; and onions exported, may act as stimulatives.

at a place called Orrel, about four miles North West of Liverpool; both which produce the grafs with less attention, and less dung, than it can be raised in the rich vale of Kirkdale, about 2 miles from Liverpool, where the greatest quantity of land in any place of this neighbourhood, is appropriated solely to this particular purpose. The number of acres under this cultivation is about 28 of the large measure *; and upon which are only employed about 1 male to each acre for the year, and one female to weed, and gather the crops of peas, fruits, &c. The masters, it is true, are all workmen, and join with the labourers in their tasks; by which is effected, what otherwise would not have been accomplished, without a greater proportion of hands to the quantity of acres; and yet, small as this number at first sight may appear, it is almost as wonderful how the master is enabled to pay his landlord, his labourers, and his seedsman, their respective claims, upon this portion of land, when the calculation is begun; and 25*l.* a year is allowed the man for his yearly labour, the half of that sum for the woman's; about 15*l.* more for rent and dung; besides the expence of marketing, and the profits that should arise to the master for his attention, skill, and superintendence, and towards the maintenance of himself and family, with a small accumulating surplus, to support the infirmities of old age. In the amount of these several particulars enumerated, a sum of money will appear, that would have been sufficient to have purchased the fee simple of the same lands, half a century ago.

There are some lands along the coast, which are employed as rabbit-warrens, being unfit for cultivation; but these animals make excursions into the adjoining lands, and commit depredations upon the corn, &c.

* Eight yards to the rod, or to the pole, or perch.

PASTURES.

THE pasture lands, are, in general, most miserably laid down, in many places being left to Nature, to supply the ground with whatever seeds remained in the earth, or came from other quarters, carried by the winds, or other accidental causes; and in the Filde particularly the lands have, on many occasions, been so exhausted by repeated plowings, that they are rendered incapable of yielding any useful herbage; those seeds that have hitherto been tried upon these lands have sickened and died away, and some have not even vegetated; and the surface remains covered with weeds of various kinds, for a succession of years. White clover, and the cleanest hay seeds (the weeds carefully picked out) have been the best system of laying down pastures, hitherto practised; but in attempting this, many of the farmers have been too inattentive to the choice of their seeds, which have been promiscuously collected as they dropped from the hay; without regard to the species of grass, or cleanness of the crops, from docks, or other spontaneous weeds, which were permitted to grow. But the lands in general abound with varieties of natural grasses; and, if in tolerable condition, in a very little time will be covered with a good sward; among which, white clover, growing spontaneously, is not unfrequent.

Instead of the old method of laying down land in small ridges (called *butts* in Lancashire) particularly in wet lands, of late the best farmers have adopted the size of 6 or 8 yards broad, with but shallow intervals; if for mowing, the lands are in a better state for the scythe; if for pasture, the cattle not so liable to be overthrown in the

deep hollows. In very dry lands, which require no drains, the surface is laid as smooth and even as can be effected; the whole being united into one plane, if possible, which not only renders the surface of the land more agreeable to the eye, but in every respect of agricultural management, superior. To prevent these butts being too high in the centre, the land is drawn out into breadths of half the size of the intended butt—then a furrow is thrown together from each side of the two, which are to be formed into one, for the centre part.

Red clover is sown also, but not as a matrix for wheat, to which the land in many places is adapted. After two years crop of red clover, although hay seeds have been added, there is generally but a scanty crop, the clover disappearing; and, unless an ample dressing of manure be also given; the produce of the hay seeds will be very scanty; this mode of manuring is by good farmers, frequently practised. Some experiments have been made upon the *Alupernicus pratensis* and *Gefucus pratensis* with great success; as also, the wild endive, or succory (*Cichorium intibus*); but these trials are yet in their infancy, and the scale but small*. Trefoil, cinque-foil, rib-grass, and rye-grass, have been frequently sown, but in no great quantities.

* Since writing the above, however, I have been favoured with the following particulars: Mr. Wakefield speaks highly of the heavy crops of endive he has mown, from the same land, and with which he has soiled his horses, viz. ten horses, the space of ten weeks at hard work upon this plant, and without either hay or corn, from two statute acres; and was cut 3 times in the season; first time about the 20th of May, which remained for seed, grew to the size of 8 or 9 feet high. The root of succory is made use of as coffee in Germany, &c.

LIVE STOCK.

THE Lancashire long horned cattle are known all over the kingdom, and found in almost every part of the county, the prime stock of which is bred in the Filde, whither the purchasers, from different parts of the kingdom, have usually resorted; but applications have not of late been so frequent as formerly *.

Amongst the cow keepers, all varieties of stock are found; they change so frequently, that when a cow, likely to be useful, and at the point of dropping calf, is brought to the market, they purchase it, without paying much regard either to the species or country.

Thomas Ecclestone, Esq. of Scarfbrick-hall, has introduced, upon his farm, the Suffolk polls; and, he remarks, they stand the climate, although they have a thin skin and fine coat; and they have, upon proof, been found to answer so well to the milk, that frequent applications have been made by the surrounding neighbours to purchase them †.

Mr. Wakefield of Brook farm, near Liverpool, and Mr. George Green of Aughton, have hitherto preferred the Holderness. But the long horn of the true Lancashire breed is the prevailing stock of the county, and seem in general well adapted to the soil; doing less damage to the clay lands, than the heavy Holderness; and being more esteemed by the feeder or butcher for their carcase, than the Scotch, Welch, or Irish cattle.

* Alexander Butler, Esq. of Kirkland, has frequently sold young heifers at the advanced price of 50*l.* per head.

† These stock seem well calculated for the spongy soft lands, being lighter upon the surface than the long horn.

There are but few sheep kept in the Southern part of the county, except those purchased, in distant parts, by the butchers, and kept a few weeks on grass for their own convenience—or, by a few gentlemen *, for the convenience of their families, curiosity, or occasionally to feed upon, or eat off, their turnips, previous to laying down the land. In the Northern part of the county, sheep are bred and kept upon the mountains and moorland. There is also a breed called the Warton, or Silver-dale cragg sheep, which is much esteemed for the fine flavour of its flesh, fineness of its wool, and tendency to fatten.

A great number of horses have of late years been bred, owing to the advanced price they have generally fetched at market ; but proper attention in the choice of either the brood mares, or stallions, has not been paid. The stocks, both of cows, of sheep, and horses, are capable of great improvements, which merit the consideration of every breeder.—The same pasture will rear the young stock, of either cow, sheep, or horse, of the best kind, at the same cost as a stock of the very best quality ; but a three-years-old heifer, of the first kind, will sell for double the price of one of a similar age of the latter description ; if a colt, the proportion is still higher, according to the superiority of its breed. If the above statement be true, is it not to be wondered at, that greater attention has not been paid by the breeder ; since both the climate and lands are capable of producing good breeds, and there are purchasers enough to excite encouragement ? Strong horses are most in use, except among gentlemen, who breed themselves. The stock of swine are in general purchased from herds who travel about the country, and who bring them from Cheshire, Shropshire, Wales, and Ireland. Mr. Ecclestone, however, has a breed between the wild boar and the Chinese,

* Mr. Ecclestone, before mentioned, has a Spanish ram, a present from his Majesty, which has already improved the quality of his wool.

which

which have very light and small bellies. Upon the same food, Mr. Ecclestone thinks, they will yield one fourth more flesh than either the large Irish or Shropshire. Their size is but small, weight from 10 to 15 score, generally about 12 score. Mr. Wakefield has the same breed.

IRRIGATION.

TRIALS of throwing water over the lands, have been made in different parts of the county; and it appears, that whenever the trial has been made, and conducted upon proper principles, the attempt has proved highly beneficial to the grounds over which the water * could be thrown, except it had a mixture of metallic, or other noxious mat-

Notwithstanding the fact has been sufficiently proved, in a variety of cases, upon different soils, it is a matter of astonishment, that so rich a source of improvement has been hitherto neglected, when such an extent of ground is capable of receiving the advantage.

The value of water, in this point of view, is not yet sufficiently known; for, like many other blessings of life, being when very liberally bestowed, the less estimated. Streams of water, which for ages have passed unnoticed, have within a few years proved a source of wealth to individuals beyond conception. What was probably considered a nuisance, has proved, in many instances, of more real value than the fee-simple of the whole maor, through the vales of which it had so long strayed, by turning machinery, &c.

The many rivers, rivulets, and rills, flowing through the mountainous part of the county, offer their rich streams to meliorate the lands through which they descend. Many thousand acres might partake of their fertilizing effects, at an inconsiderable expence; lands too, at present, poor, bar-

* See treatise on watering meadows, by Mr. Boswell.

ren, and unproductive, at a distance from other manures, might be rendered competent to maintain, an increased number of valuable animals, by which the quantity of yard-dung would be increased, in proportion to the stock kept, and applied, in much more abundant portions, to those lands, which are beyond the salutary effects of the overflowing waters.

The present system of converting the arable into meadow and pasture grounds, to which the water, with peculiar property, may be applied, is a strong argument in favour of irrigation.

GRAIN.

THE GRAIN principally cultivated is oats, which, when ground to meal, is the food of the labouring class, particularly in the Northern and Eastern borders of the county, made up into bread-cakes, of which there are varieties prepared by fermentation with sour leaven—others without leaven, and rolled very thin; also water, boiled and thickened with meal into porridge; and this, eaten with suet, or butter-milk, small-beer sweetened with treacle, or treacle only, was in many families, about forty years ago, both the breakfast and supper meal*. The general use of tea, especially

* This custom was so rigorously observed by a certain family—3 brothers, batchelors, the last of whom died only in 1792—that upon Sunday morning it was the constant practice to make a double portion of porridge, one half of which was set by for the supper-meal, and, to keep warm during so long a space, was put within side of a bed, and carefully covered up with the cloaths; and this was for the general accommodation of the 3 brothers, who each went to a separate religious meeting-house, and the female domestic to a fourth; so that, when any one of the family came home, they might find immediate accommodation, by the meal already dressed.

These

pecially amongst the females, has lessened the use of meal at breakfast; and the influx of wealth has induced numbers to indulge, upon many occasions, with the wheaten loaf *. Notwithstanding the consumption of oat-meal, is not so general at present as it was formerly; yet the quantity, still used, is very considerable; and the growth of oats, is greater in proportion, than that of any other grain. There are some excellent wheat lands †, e. g. Low Furness, the low lands near the shore beyond Lancaster, the Filde, and the S. W. part of Lancashire; but wheat does not succeed well, when bordering upon the Moor-lands: neither does barley, which seems, of the two, more delicate in its choice of soil, and there is a greater diminution in the cultivation of this

These 3 brothers were men of landed property, had little society with mankind, and lived chiefly upon the produce of their own land: they very much depreciated the custom of selling butter, to accommodate folks who indulged in tea (e), an article which probably none of the 3 brothers ever tasted. They brewed their own ale, and were proud to bring a cup to cheer the heart of a friend, and to hear their liquor praised. Spirituous liquors were unknown in their mansion. A couple of swine, fed and slaughtered by themselves, supplied the family the whole year with flesh-meat, except occasionally some neighbour might kill a beast for sale. Constant attenders upon divine service, they brought home the texts of the different preachers, and the news of the foregoing week. The eldest brother, would take an excursion, generally to the fair at Manchester, held upon the Whitsun Monday. He sauntered through the market for cattle, looked through the stands erected for the display of toys for sale, purchased a pennyworth of gingerbread, and regaled himself with a pint of ale, then returned home, and related the adventures of the day.

* The influx of wealth amongst the labouring class seems, to have caused greater indulgence in liquids than in solids. It has not been uncommon to see a groupe of tattered companions; some slipshod, and some *unshod*, and uncovered either above or below, regaling their palates over their emptied bottles of port.

† The wheat in this county seems less subject to the blight than in many others.

(e) "I wish the butter may run through the bottom of their baskets," were their usual expressions.

grain,

grain, than of either wheat or oats *. Beans, peas, &c. are also cultivated, but seldom drilled; a small quantity of buck-wheat also, for the use of poultry, or to be placed in previous to a crop of wheat, but very little rye is at present sown †.

ROTATION OF CROPS.

OATS, oats, oats, universally sown towards the North East and South East of Preston for years together, except this chain be broken occasionally by a crop of potatoes, and afterwards wheat, or wheat on a summer fallow. In the Fildes, which, from its fertility, has been called the Granary of the county, the soil has been worse abused.

* The Tartarian, or reed oat, for some years past, has been the favourite species of this grain in the neighbourhood of Liverpool. Its produce is great, but the grain inferior, and not yielding an equal proportion of meal with the early or Dutch oat. The straw is luxuriant, and seems well adapted to lands exhausted under bad management, nor is the grain so liable to be shaken out by the North-West gales, to which this county is exposed, as the other sort.

† It was observed, by an ingenious gentleman (c), that madder, he imagined, might be successfully cultivated, and with advantage upon moist lands, since the art of dying cottons a turkey red has been discovered, for which purpose madder, in the root, is absolutely necessary. Madder, which previous to this discovery was of little value, is now worth 50 per cwt.; and, if of prime quality, worth 120 per cwt. This root was attempted to be cultivated in this county some years past, under the encouragement of a premium, by the Society for promotion of Arts and Commerce, but failed of success under the expensive process of drying, by artificial heat, the difficulty of grinding, peeling off the bark, &c. But of late the sun has been found sufficiently powerful to cure it, and the grinding and peeling process better understood.

(c) Leigh Phillips, Esq. Manchester.

Certain

Certain fields have been kept under cultivation, it is asserted, for more than a century, without intermission, under the following rotation. After marle, 2 or 3 years oats; beans or barley, each one year. If beans, barley the year after; but, if barley, then beans, and this alternate change of beans and barley continued for a few years. The eighth year from the first marling is generally reckoned a period, from which the land is upon the decline, and a complete summer fallow is given, and some *till** (as it is called) is added, upon which, wheat; after the wheat, 2 crops are taken, 1 either of oats, beans, or barley; and then another fallow, with the addition of *till*, and two more crops of grain, above specified; and the practice, it is said, may be advantageously followed for the space of 20 years, but is often continued much longer, as before observed. Upon such courses it is unnecessary to dwell longer, as they can afford neither pleasure, nor instruction, to the experienced cultivator; but proceed to some other practices, which are followed in other parts of the county in rotation†. Oats, fallow, and next year for wheat; if for barley or oats, the land to be manured and laid down with red clover and grass seeds; 2. oats or barley with dung, if rich, another crop, barley, then fallow for wheat; afterwards barley, with dung, and then laid down with clover and hay seeds; 3. wheat, with one furrow, barley, with

* A compost of earth and lime, mixed. Yard dung, and sea-muscles, have been used, but this article is not found in sufficient quantities, nor is it durable.

† In a note, however, take the following wretched rotation, which has been frequently practised, and which has reduced both farmer and soil to an equality of poverty.

An old poor pasture broke up without being previously marled: 1. oats, 2. fallow, 3. wheat, 4. oats, 5. vetches and wheat, 6. oats, 7. fallow, 8. wheat, and this last crop probably sooted; in which state the land is suffered to remain till again restored by that Power which can not only restore, but create.

dung; fallow, for wheat; barley, or oats, laid down with clover, &c. 4. potatoes, wheat, barley, with dung, and laid down. 5. after wheat, fallow for turnips, with dung, laid down with well dressed hay seeds, from the cleanest and best meadow lands, with a mixture of white clover; 6. early potatoes, after which a crop of turnips, then wheat or barley; 7. early potatoes, and sown with grass seeds, and white clover, without any corn; the hay suffered to stand, till the seeds become ripe, to drop and fill up vacancies, the ground well dunged after the first crop of hay; 8. if the land be full of rushes, by only taking a single crop of oats in the following manner; by plowing one furrow with a good dressing of dung, harrowed in, upon which the crop of oats, with grass seed only. By which the rushes are destroyed, but the grass roots are preserved, and the grass meliorated by exposing the soil to the air and sun, by turning it once over.

GREEN CROPS.

POTATOES. Lancashire was the first county in this kingdom, in which the potatoe was grown: and as it is able at this day to boast a superior cultivation in that important article, in which it still stands unrivalled; it may be requisite to descend to particulars in regard to the management of that crop: 1. A sward, or fresh lay, is desirable, but not always requisite. Good crops have been frequently raised from lands exhausted. The ground being previously cleaned by plowings and planted (if the ground can be got into condition) in April, in drills about 3 feet distance, and from 12 to 9 inches asunder, in each drill, the

the sets * placed immediately upon long dung from the yard, &c. but dung from the great towns, produces a wonderful effect upon lands not formerly accustomed to that article ; and it is supposed, will generally enrich twice as far, with equal effect as the manure formerly used from the farm yard, &c. This is experienced in the lands bordering upon the canals.

2. Although April be the prime season for producing a crop of good potatoes for the table, because this vegetable requires a certain portion of time, to acquire that degree of maturity, which renders it peculiarly mellow and farinaceous, yet it is frequently planted as late as May, or even June ; and yet produces abundant crops, but not of the same matured quality, as those planted at a more early season.

3. The apprehension of frosts (by which, if the tops are caught, after breaking the surface, they pine and sicken, and the hopes of the husbandman are blasted,) sometimes operate against this early season ; yet good planters risque the chance of frosts, in order to obtain superior quality.

4. The crops are kept clean from weeds by the plow, first by turning a furrow, left for that purpose, towards the young plants, as soon as they appear ; and then by turning a furrow from each side of the drill, and which is sometimes, if very foul, harrowed by a small triangular harrow, running through each drill. After the weeds have been so exposed, the furrow is turned back again, and sometimes the

* The surveyor has made some experiments to ascertain the best mode of cutting the sets ; for, if the potatoes be set whole, putrefaction does not always ensue, and, which seems advantageous to the following crop, a set of a large size, to a certain degree, is better than a small one. The best method he has yet discovered, is taking off the sprout, or nose end ; and the umbilical, or tail end, of the potatoe, and leaving the middle entirely for the set, the worst method of cutting the potatoe appears to him cutting the potatoe down the middle, from nose to tail end ; a practice but too common.

same plough, or a double-wristed one, runs up each drill once more ; besides the destruction of weeds, the land, by these operations, is loosened, exposed to the sun and air, which contributes greatly to improve the crop.

5. The varieties of seeds in use are numerous.—Ox noble, and the cluster potatoe, are planted for the cattle *; the pink-eye, and a variety of others, with different kinds of kidney-potatoes for the table. The old winter red, as it is sometimes called, ought to be mentioned for its peculiar goodness in the Spring, when other kinds have lost their flavour ; this potatoe is then in its best perfection ; it has another quality, that of never having been known to curl. There are also great varieties of early potatoes, and great attention is paid to raising new sorts of the best qualities from seeds, of what is called the crabs, or oukles, which grow upon the stems.

6. Great attention is paid to changing the seed occasionally, to prevent the curl †, the practice of obtaining fresh

* Of the Chester potatoe, the surveyor had an opportunity of viewing the produce of a crop, lying upon the surface of the ground, after being just taken up, belonging to Colonel Mordaunt, of Halsall, in this county. An intelligent farmer, who accompanied me, confessed, and we both agreed, that we never saw so abundant a crop ; and yet, as we were informed, without any dung ; from a lay.

The cluster, or conglomerated, or Suffolk (for so it is called by Mr. Howard, who first introduced it to notice), was cultivated in this county 25 years ago (a) from sets left by that gentleman with the Society for the Promotion of Arts and Commerce.

Vide *Duff's Memoirs*, vol. X. It has since been produced from seed, and, though much improved in shape, retains the red colour and saccharine taste.

(a) By the Rev. Mr. Heathcote, rector of Walton, and Mr. William Haliday, Anfield.

† The surveyor had the honour of receiving a premium from the Society for the Promotion of Arts and Commerce, in the year 1789, for a letter on the Lancashire method of preventing the curl. He has the pleasure to observe

fresh seed from Scotland, (as was the custom a few years ago), is not now so frequent; a change from the moss lands, and *vice versa*, being generally sufficient. A change of land is also desirable, but not always practicable: crops have been successfully taken, for a succession of years, from the same land.

7. The produce of a crop is, on a medium, from 2 to 3 hundred measures, or bushels *, the statute acre. The early potatoes are generally planted in beds; in rows about 8 inches distant, and the sets 4 or 5 inches separate, because those early potatoes, being of a less size, require a smaller space; but the advanced price these early crops fetch at market, render them a profitable article to the cultivator †; who, besides reaping a profit from this early produce, has his ground prepared from another crop the same season. The markets of Manchester, Oldham, Rochdale, and the neighbourhood, are supplied with great quantities, not only from Warrington, but as far as Rufford, Scarfbrick, &c.

Upon the same ground, from which a crop has already been taken, the early seed potatoes are in some places afterwards planted, and which after being got up, about November, are immediately cut up into sets, and preserved

serve that the fact seems to be confirmed, from the general opinion and practice of the county; nor did he observe a single diseased potatoe in the whole of his survey—the crops were universally luxuriant. This thought is improved upon by Mr. Thomas Wright, gardener to John Fazakerly, Esq. Prescot, who has sent some favourite plants which had caught the disease of curl, to the moss lands, and which change of lands he expected would effect a cure.

* By a bushel of potatoes, is generally meant 90 lb. before they are cleaned.

† Mr. Eccleston took the surveyor to view a piece of ground, 30 perches (8 yards to the perch) the early potatoes raised upon which had been sold for £. 30 in the present year 1793; after which a crop of turnips had been grown, which, at 6d. per bushel, were worth £. 50 per acre; after which the same land was to be cropped with wheat.

in oat shells *, or saw-dust, where they remain till March, when they are planted, after having taken off one sprit, and planted with another, of a length sufficient to appear above ground in the space of a week.

But the most approved method is, they cut the sets, and put them on a room-floor, where a strong current of air can be introduced at pleasure, the sets laid thinner, viz. about 2 lays in depth, and covered with the like materials, (shells or saw-dust) about 2 inches thick : this screens them from the winter frosts, and keeps them moderately warm, causing them to vegetate ; but at the same time admits air to strengthen them, and harden their shoots, which they improve by opening the doors and windows on every opportunity of mild soft weather : they frequently examine them, and when the shoots are sprung an inch and a half, or 2 inches, they carefully remove one half of their covering, with a wooden rake, or with the hands, taking care not to disturb, or break, the shoots : in this manner they remain till the planting season, giving them all the air possible by the doors and windows, when it can be done safely from frost : by this method the shoots at top become green, leaves are sprung, and moderately hardy. They plant then in rows, in the usual method, by a setting-stick, and carefully rake up the cavities made by the setting stick, by this method they are enabled to bear a little frost without injury. The earliest potatoe, is the superfine white kidney † ; from this sort, upon the same ground, have been raised 4

* Vulgarly called meal shades.

† The early potatoe is a distinct species, of which there are yet great varieties.

The bushel are counted in Mr. Young's *Farmers' Tour* is only 45lb. which accounts for the large number of bushels, 427, at which he averages the produce of 70 acres.

A *fringe* acre in Walsby, last year, produced 228 bushels, of 90lb. which is exactly Mr. Young's average, or 427 bushels of 45lb.

crops; having sets from the repository ready to put in as soon as the other were taken up; and a fifth crop is sometimes raised from the same lands, of winter lettuce.

The above excellent information was communicated by J. Blundell, Ormskirk, and has been hitherto kept a secret amongst a very few gardeners.

8. The manner of taking them up varies. The three-pronged fork is in general use—the soil turned over, the weeds picked out, the potatoes gathered and separated, according to their size, by the same person. Another practice is, for a strong man to take a three-pronged fork, but crooked (the same which is generally used to pull dung out of the cart) which he strikes down between every root, and pulls over, laying the plants bare, which are taken up by 2 children that follow. Another practice is to turn a furrow from the potatoes, with a Rotheram plow, and then with another plow, furnished only with a share, to turn up the potatoes which are afterwards gathered.

After the potatoes are gathered, and sufficiently dried, they are put together in heaps, in the shape of the roof of a building, covered closely with straw, which should be drawn straight, and to meet from each side in a point at the top, about six inches in thickness, and then covered with mould, closely compacted together, by frequent applications of the spade; after which Mr. Eccleston makes holes in the mould, at the sides and tops of these repositories, as deep as the straw, and about three yards distant, to prevent the air, which, he says, visibly arises from the fermentation, to escape: after the fermentation has ceased, the holes are closed to prevent the effects of frosts, or rain.

9. The utility of the application of potatoes to feeding stock, is sufficiently known, but not sufficiently practised. Converting the produce into immediate cash, by taking it to market, is a stronger temptation, than waiting the more tedious process of purchasing stock, and fattening the cattle;

cattle ; but a source of improvement to the land, and consequently, superior in the issue, is by this means done away.

10. From the amazing quantities consumed by stock, it may not be amiss to mention the manner of boiling, &c. which is almost universally by steam, in a large hamper, or tub, perforated and placed over the water : in this way they are readier for use than by being immersed in water, after which they are given either warm or cold, mixed with chaff, bran, hay seeds, barley, or oatmeal.

To conclude, if America, whence this choice vegetable was first imported, had yielded nothing else to the researches of the European, than the potatoe, the present generation would have reason to be thankful for the acquisition, and to the planters in Lancashire, for their spirited attention to the cultivation of that excellent root.

Turnips It must be acknowledged, that turnips are not cultivated but on a very contracted scale *, and even then but seldom hoed ; and yet there are not many articles more profitable, there being seldom a crop destroyed, or lost, by the slug (or whatever that is which destroys the tender plant). The turnips find a ready market if near a great town, whilst the inferior crops generally pay well, if applied wholly to feeding cattle ; and they leave the land in so clear a state, as to be fit for most kinds of grain, and is generally taken, by the best farmers, as a previous crop, to lay down to grass or crops of clover.

Mr. Eccleston not only sows his turnips in drills, but every other seed, and was the first who introduced this vegetable into a system of crops in his own neighbourhood.

* Turnips, to the amount of eight acres, were cultivated in the neighbourhood of Wrightington, by William Diconson, Esq. about 30 years ago : before this period none had been sown but in the gardens.

Clover.

Clower. This sort of grass is cultivated generally with success; being greatly preferred to the white hay, by those who keep horses in the great towns for the draught; containing, it is supposed, more nutriment. If opportunity offer, instead of sending their horses to graze upon the field, which is difficult to obtain, a lot of green clover is purchased and brought in that state to the consumer, who soils his horses in the stable for a few weeks in the year, and which acts both as food and physic, and enables them to stand work the better.

The lands upon which clovers have been frequently grown, it is said, do not yield such plentiful crops as they did some years back; second crops, in this Northern climate, are seldom worth the risque of attempting for hay, and, besides, are thought to exhaust the lands, therefore are generally pastured.

Other green crops. Vetches are sometimes cultivated as a smothering crop, and a preparation for wheat, but not very generally. Lucerne has been attempted, but at present I think not much, if at all, cultivated. Scotch cabbages have been planted, and good crops raised, but not to any great extent. Carrots are successfully cultivated upon sandy loams, in the neighbourhood of Kirkby, Scarsbrick, Burscough, Rufford, &c. for the supply of the Liverpool market, and sometimes purchased to be given to horses (particularly wind-broken)—They are generally sold about 2s. 6d. or 3s. per cwt. and are reckoned a profitable crop on suitable lands.

FALLOWING.

IN some intelligent letters, which the surveyor has received, in answer to the queries which have been circulated by the Board, very opposite opinions have been held upon this subject. According to some, fallowing is too little, according to others, it is too much practised.

From what has been said before, it is evident, that fallowing is here understood, as preparatory for wheat. The tenant being generally under a covenant, restraining him from sowing wheat upon clover, whence a crop has been, the same year, previously gathered, or from a bean stubble, &c. as a practice tending to exhaust, and rendering the ground foul, which, by way of reproach, is called stubbling. Upon the system of green crops preceding wheat, by way of saving one year's rent, and the labour of fallowing, the potatoe crop should seem to claim a superiority; both from the dung given, and the clean state into which, under good management, the land is brought—yet the neatest farmers seem at present not very partial to this mode of agriculture. They say the succeeding crop of wheat is more feeble and worse fed; and the effects of these two, potatoes and wheat in succession, are evident upon successive crops for years afterwards.

The fallowing, as it is sometimes practised, is not performed in the neatest manner. The lands not being broken up, till too late in the season to partake of the influence of the frosts, and to furnish a proper opportunity for the cross-cutting, or stirring (as it is called), this work being the grand operation; and, it is requisite, that a dry season be caught whilst the land lies open, and a large surface exposed to the influence of the sun and air. But if greater attention

were

were paid to the turnip culture, with proper hoeing and dressing, fallows would become less necessary, and, according to the present advanced rent of land, they are too expensive for the tenant.

M A N U R E.

MARLE is the great article of fertilization, and foundation of the improvements in the agriculture of this county, and this earth or fossil is fortunately wanting but in few places. There are several varieties of this article, valuable in proportion to its intrinsic quality, or the calcareous matter which it contains; or the nature of soil to which it is applied. To the stiff clay lands, the blue or reddish slate marle, full of calcareous earth, is more effectual; but to the light sand lands, the strong clay marle is more genial. Thus not only a calcareous stimulus is given, but additional matter is afforded, to correct the nature of the soils, by loosening the texture of the one, or giving adherence to the particles of the other, by the opposite qualities of the different marles applied. Barren sand lands, poor heaths, in the South of this county, have been, under the effects of marle, rendered productive, but this at no small expence*.

The summer is the best season for laying marle upon the land, sometimes immediately after a crop of hay has been taken. Its effects upon the grass are soon visible, from its rich verdure which it produced. Long experience has sufficiently proved the propriety of the general

* Improving, marling, and fencing, of Bootle marsh, cost £.22 14s. 1d. per acre, of eight yards to the rod.

practice of the county; which is, to lay the marle upon grafs lands—the older the better; the fward and grafs united caufes a putrefaction and fermentation, which feems neceffary to produce a proper effect.

The quantity laid on is from two to three, or three and a half cubic roods of eight yards to every ftatute acre; the expence of which is, according to the diftance carried, if in the fame field, or within the diftance of fixty rods, on the average, at about eight pounds *per* acre. It is reckoned a much better practice to have the marlings repeated, with a gentle covering, than a ftrong thick coat of marle, which is intended to laft a number of years. If thefe dressings of marle were repeated more frequently (and no husbandry has been found to pay better), the lands in Lancashire, in general, would be found as productive as almost any in the kingdom.

The marle fhould partake both of one fummer's fun, and one winter's frofts, at the leaft. After being expofed to the effects of the weather, in large lumps, it begins to fall, or melt; the particles appear unctuous and foapy, and the quality of the fubftance feems quite changed from its original ftate. When, in the enfuing fpring, it fhould be divided (the parts now feparate with eafe), and equally diftributed upon every part of the furface, and which is, with facility, effected by harrows, &c. after which it ufually plowed under; but, if permitted to remain a year or two longer, the lands would be more improved in the iffue, by the length of time given previous to the marle being plowed in. But the marle does not produce its full effects upon the foil, till intermixed and incorporated together by a repetition of plowings, and an intermixture of dung, or other manure, for marle is not effectual without fuch addition.

Notwithstanding there is a general propensity to convert arable land into pafture and meadow, as moft convenient

to the populous state of the county, yet an intelligent gentleman * judiciously observed, that it might be occasionally necessary to break up grass lands, if only for the sake of reaping the superior effects of marle, which not only adds to the staple of the soil †, but to a certain degree improves, and enriches the quality of the grass;—and a greater attention to green crops during the process of the plow, would certainly afford food for a greater quantity of stock.

Marle is got by falling it in large clods; this method is expeditious, but requires great caution; and is frequently attended with danger; the piece intended to be fallen is undermined, and loosened at each side, by being cut through; long piles are then driven in at the top, and sometimes water is required to insinuate itself into the interstices which the poles have made. The clod falls with such violence as to break the mass into pieces.

Expence of marling upon Bootle marsh about the year 1780, besides fencing, &c.

	£.	s.	d.
Getting and filling <i>per</i> rod, of 8 cubic yards	0	10	0
Spreading	0	2	2
Carting; the average distance from the middle of the pit to the middle of the land, 60 rods	3	9	0

N.B. In this calculation there are six carts, five in motion, each goes the distance of twelve rods, whilst one stands in the pit to be filled. The size of each cart is 20,736 inches (cubical), usually drawn by three horses; the

* J. J. Atherton, Esq. Walton-Hall.

† A cubic rood of marle, of 8 yards to the rood, adds nearly 2 inches, or 1,9064 to the staple of the soil to a statute acre of land.

weight of the load about 15 cwt. and two cubical yards of marle make about three loads.

The number of workmen are six fillers and getters : usually two right-handed men at one wheel, and two left-handed at the other, with one filler behind—one getter is generally sufficient.

	£.	s.	d.
Getting, filling, and spreading to the acre of 8 yards to the rod, on Bootle marsh, was	3	19	1
Cartage	9	8	0
Digging for the marle, clearing the head, ex- pences at finishing, &c. <i>per</i> acre	2	7	0
	<hr/>		
	£.	15	14 1
	<hr/>		

There were about $6\frac{1}{2}$ rods, laid upon the acre on this occasion.

The men got 2s. 6d. and the carts 7s. 6d. *per* day.

Getting and filling marle is very laborious work, and requires the utmost exertion to obtain these wages; and which, after all, can only be effected by men young and in their prime, cheered by the company of fellow-labourers, and frequent refreshments. Five working-days are reckoned equal to six, for they usually start at half past four in the morning, and rest one hour at breakfast, from eight to nine—rest again from twelve till two, and then work till six; and generally get out nine rods *per* week.

The

The present price is—

	£.	s.	d.
For getting and filling <i>per</i> rood	0	12	0
Spreading	0	2	6
Carting	1	13	0*

Sea slutch, from the Ribble and Wyre, is, in some places adjacent, made use of as a substitute for marle; to which it is reckoned equal, but in general not so durable†. At Rossal in the Filde, where there is no marle, after a stratum of strong clay under the soil, they pass through a sand with cankered veins—next a sand with sky-blue veins, with thin shells like barnacles, called, in the provincial phrase, hen-fish; and this proves a good substitute for marle.

Besides the dung got from the farm-yards, there are great quantities raised by the cowkeepers and stablekeepers in the large towns. At Liverpool horse dung sells at about 4*s.* 6*d.* *per* ton, cow dung from 3*s.* 6*d.* to 4*s.* 6*d.* *per* ton, butchers dung 6*s.* *per* ton, the ashes mixed with privies, scraping of the streets, &c. under the denomination of night soil, about 19*d.* *per* ton †. Liverpool also occasionally has the dregs of blubber from the whale fishery after boiling the oil, which, mixed with soil, is a rich manure, but not lasting. Soap ashes also, if put upon old lays, has been found very advantageous, and very durable:

* This subject has been detailed to a greater length than some may think requisite, but marling is in this county performed in a masterly manner. The particulars here collected may be useful, on future occasions, to the farmer, as the documents are only registered in the memory of old practitioners. It is with no small difficulty that the several *data* are sometimes obtained and ascertained, and it was with some labour they were collected for the present purpose.

† Mr. Standen, Steward to Bold Fleetwood Hesketh, Esq. says, more durable than marle.

‡ At Manchester, cow and horse dung are about 1*s.* *per* ton higher.

in pastures; but not so durable either plowed or in meadow *. Rape dust has been found to answer, laid on at about 60 bushels to the acre, and cost about 10 *d.* per bushel. Soot is also used in the spring, and thrown with the hand upon the corn; this is often practised upon poor exhausted lands, and, if rain immediately ensue, with success; but there seems something at present inexplicable about the proper application of lime, or its operation upon different soils. It has been frequently tried without any apparent utility, and it should appear that lime requires some particular substance in the soil whereon to act, to produce any good effect. Lime has in general not been found to answer so well a second time, as the first operation. It also requires a sward, or vegetable roots, to produce fertility †; and it more frequently succeeds when mixed properly with earth, either on fallows or sward.

But neither marle nor lime produces any good effects upon the exhausted lands of the Filde, which have undergone the *centennial ordeal*. Upon these occasions, the farm-yard dung seems to be principally wanted, to restore the oily part extracted by such a continued succession of exhausting crops. From the quantity of land that is plowed, but not with a proper rotation of green crops, for the stock which ought to be kept, there is no resource for raising dung but from the cattle, as there are no towns sufficiently large to afford proper assistance, nor yet canals to bring it from distant places.

Bone-dust, or bones ground in a mill, have been used with success by William Mayor ‡, the farmer at Ashworth-hall, near Rochdale; he has two fluted iron rollers placed at the end of a corn-mill shaft, which grinds them expeditiously; he applies them to his own grounds, and

* Quantity 40 to 50 tons per acre, from 8. to 100. per ton at Liverpool.

† There are some exceptions, nevertheless, even to this.

‡ And by George Clayton, Esq. Leicestershire near Preston.

disposes of them to different purchasers. Near the sea, good composts have sometimes been made of land lime, earth, dung, and sea weeds, with a species of shell-fish growing upon the rocks, and which is found to be an excellent manure for barley. The scrapings from the streets, along with ashes and night soil, has, by an experienced farmer *, been mixed together with lime in the following proportion: to every twenty tons weight of this black muck (as it is sometimes called), he adds about forty bushels of lime, which he mixes together before the lime runs to mortar (his own expression), which destroys the good effects, and prevents a proper incorporation; and which answers well upon either dry or wet lands, particularly when laid down to either pastures or meadows. The drainings from the farm-yard have been of late, by some good farmers, collected into one place, and, if they cannot be thrown over the lands any other way, are conveyed in casks by carts, and distributed upon the land by means of a trough perforated with holes.

The skimmings of sugar under refinement, when boiling, is a rich manure; so much so, as to take three parts of soil to mix together. Three loads of earth, and one load of these skimmings, which consists of American clay and other fertile ingredients, make four loads of rich and durable manure.

* Mr. Henry Harper, Bank Hall.

USEFUL INSTRUMENTS IN HUSBANDRY.

ABOUT thirty years ago, the Rotheram or Yorkshire plough, was introduced into the Southern part of this county *. The plough formerly in use was almost a load of itself for a draught horse. In the North of Lancaster a plough, called the Cumberland plough, originating in that county, is generally used. A French plough has been lately introduced by Mr. Duckett, son of the celebrated Duckett of Esher, in Surrey.

The plough has a skim coulter, by which the surface (if foul) may be turned under, and fresh soil brought up; as it is capable of bringing up the land from six to ten, and is usually drawn by three horses. Another instrument has been lately introduced, which Mr. Eccleston, with propriety, calls the *minor*; which is a plough-share fixed in a strong beam, without mold-boards, and drawn by four or more horses, and follows in the furrow the plough has just made, and, without turning up the substratum, penetrates into, and loosens, from 8 to 12 inches deeper than the plough had before gone; which operation, besides draining the land, causes the water to carry along with it any vitriolic or other noxious matter, by the substratum thus loosened; the roots of plants may penetrate the deeper; and, in course of time, that which is but a barren substance may become fertile soil.

There are more varieties of carts in this county than in the same given space in any other part of the kingdom.

* By the late J. Atherton, Esq. Walton Hall. N. B. The plowmen of this county are reckoned excellent workmen in that branch, and not inferior to any ploughmen in the kingdom.

in the neighbourhood of Liverpool they are a very large size, those employed in the coal-trade within the town are gauged to 36 bushels Winchester.

The country dung carts, in the same neighbourhood, are also of a very large size, and generally will hold thirty-six Winchester bushels, and carry three tons of dung; they have six-inch wheels. In the interior parts of the county, the carts greatly diminish in size, and have variety of forms; in the Northern part the size is very small; the clog wheel, as it is termed (three planks of ash), was formerly much in use in the North, on account of cheapness, has yielded to the spoke-wheel; the clog being more clumsy, and the cart more liable to upset—in these carts the wheel did not move upon the axis, but both turned round together.

Single carts are in more general use. Mr. Jenkinson of Yealand, writes, “that a gentleman, in his neighbourhood, made a fair trial in the hay field between the large and small carts, or what is often called double and single carts, in which the latter had much the advantage, in dispatch of business; and the consequence was, that the double carts were little used afterwards.”

Although Lancashire is not a corn county, yet, labour being dear, there are several thrashing machines already introduced; one of which belongs to Colonel Mordaunt of Halfall, which moves by water, thrashes, winnows, and grinds (or crushes, the corn for provender), all at the same time. Many of the neighbours apply to this machine, for the use of which the Colonel takes or charges one twentieth *. Hand machines are also introduced, and are useful to the farmers, chiefly made by John Naylor, at Ashton, near St. Helens. This machine requires two men to turn, a boy or girl to feed, and another to take

* The average price paid for thrashing in the district.

away the straw *. The price of these hand machines are about six pounds each.

A churn has been lately introduced, which seems very useful for its neatness, cleanliness, and economy (as it occasions less waste of milk). The churn, or vessel, instead of being round, has four corners, and the milk is put in motion by turning a handle; upon which are fixed boards which move in the manner of a reel within side the vessel, horizontally, by which the operation of churning is something easier, and the work expedited.

A hay-cutter, in the form of a spade, straight, and sharp at the point, and upon both sides, performs the work with much more ease and expedition than the common hay-knife. This tool was introduced from Yorkshire by Mr. Eccleston.

A *lactrometer*, to try the different qualities of milk, has been invented by Mr. Dica, mathematical-instrument-maker, in Liverpool, and patentee of a neat, simple, and accurate instrument to try the strength of spirituous liquors and worts.

This *lactrometer* should ascertain the richness of milk, from its specific gravity, compared with water, by its de-

	£.	s.	d.
* Hire of two men, say - - -	0	3	4
Boy and girl - - - - -	0	2	0
	<hr/>		
	0	5	4

and who can, with this machine, thrash about 30 bushels of wheat *per* day, which would come to 11s. 3d. at the present price paid for thrashing. About 70 bushels of oats also, *per* day, which would cost 9s. 3d. according to the present price paid. But hand machines will be found insufficient for this heavy work. Mr. Henry Harper, of Bank-hall, has contracted for a thrashing machine, to be made for £.40, which will require 1 horse, and is to thrash out from 8 to 10 bushels *per* hour, according to the length of straw, and quantity of grain contained.

gree of warmth taken by a standard thermometer, on composing its specific quality with its warmth : on a scale constructed for this particular purpose, and by which, if the principle be right, may be discovered, not only the qualities of the milk of different cows, pastures, foods, as turnips, potatoes, grains, &c. but also probably which may be the best milk, or best pastures for butter, and which for cheese. This instrument, however, is yet in its infancy.

The surveyor took one of these instruments with him upon his journeys, and made experiments at different places ; but time sufficient, for a full and complete experiment, seldom offered : other circumstances intervened, and prevented a fair trial ; but, at his own house, he has made a number of varied experiments, upon different milks, from different farms, and which are here adjoined.

A swing-harrow has been lately introduced, and seems coming much into vogue.

Hurdles, of an improved construction, merit notice. They are fastened by a wooden pin, through a strong piece of oak, in a manner so as to be loosened and removed with less trouble, and less injury to the hurdle, than the old forms. These were observed at Mr. Bayley's, of Hope.

Winnowing machines, of an improved construction, have been introduced, and gain ground : they dispatch work briskly, and save the chaff.

A machine for cleaning corn from small stones, or earth, of which foreign cargoes are, sometimes, too full ; and invented by Mr. Whiteside, of Lancaster, should not be unnoticed, as also an invention of the same ingenious person, of opening, shutting, and bolting the doors of granaries, or corn room ; he imagined, that treading upon, and walking over the corn, to shut the door, or window, which admitted the air, was injurious ; he therefore contrived a bolt, which opened the window, and shut it

again, by only pulling a cord, which runs upon a pully, and communicated with the shutter. The contrivance has both simplicity, neatness, and security.

Oxen have been made use of formerly, but always upon a contracted scale. Horses at present are universally preferred for husbandry business. The paved roads of this district do not agree with the feet of oxen.

The seed time, and harvest, varies a little between the Northern and Southern parts of the county. Those towards the East, and contiguous to the mountains, are in general later than the South-Western parts. Wheat seeding is from the middle of September to the end of October. Mr. Eccleston, of Scarisbrick, writes, "the best crop of Winter wheat I have seen this year, or, indeed, ever recollect, was sown after a crop of potatoes, as late as the 20th of last March. I mention this as an extraordinary fact."

The time of reaping wheat, from August to September.

Beans are usually sown early in March, and reaped in September.

Common oats in April. Early oats in May and June, and reaped in August, September, and October. Barley is sown in April and May, and reaped in August and September. These are the general seasons.

But there are always exceptions to general rules; e.g. the present year there were several fields both of barley and oats, not secured, in the South West part of the county, the second week in November; and there was a certain field of barley in Toxteth Park, not cut the third week in November.

On the moss lands, where paring and burning is practised, both seed time and harvest is very late; owing to the uncertainty of the weather—if wet, the burning proceeds but slowly; the seed time is consequently retarded, and the crops are by these means so late, as to become precarious,

carious, from the advanced season, being frequently exposed to frosts and snows. If the barley from the most lands be well housed, it is in high estimation : and fetches an advanced price from the farmer, who prefers corn raised upon those lands for his seed. Mr. Eccleston sowed one year a field of barley about the middle of June, and which he housed the following year, January 1 ; and this crop was all eagerly purchased by the farmers, in the Springs, for seed corn.

OPEN OR COMMON FIELDS.

THERE are but few open, or common fields, at this time remaining ; the inconvenience attending which, whilst they were in that state, have caused great exertions to accomplish a division, in order that every individual might cultivate his own lands, according to his own method ; and that lots of a few acres, in many places divided into small portions, and again separated at different distances ; might be brought together into one point.

The inclosures, or fields, are in general very small ; so much so, as to cause great loss of ground from their number and space occupied by the hedges, banks, and ditches. This great number of fences too, prevents the air from freely circulating, by which the crops, both of corn and hay, are deprived of receiving the salutary effects of the sun and air, and, after the grain is reaped, the process of drying, healing, &c. is materially delayed.

Besides

Besides the number, the banks are full of weeds, which often remain unmolested, and are dispersed by the winds over the adjoining fields, to their no small injury. The hedge rows are but too frequently neglected and permitted to spread their branches upon the lands. Plashing is almost totally neglected, only by a few spirited gentlemen. Many hedges seem fast upon the decline, and must in a little time be renewed. Durable as hedge-timber may be, a length of years brings on old age, and, at last, decay. The newly-planted hedges are chiefly of thorn alone, without intermixture, as formerly, of hazle, alder, willow, holly, &c.* The hedge-rows, which the surveyor has planted, are upon the plane, without either ditch or bank, secured by rails, till grown up, and then trimmed, so as to meet in a narrow point at the top. These fences are neat and secure; and have the advantage of hedges, cut square at top, which are generally thin in the bottom. Many fences, particularly in the northern parts, are made of stone, some from quarries, and some of pebbles. Buildings are frequently erected with the latter, uncouth, and unshapable, as they may appear for such purposes.

* The young roots of the new-planted thorn, are liable to great injury, if not well secured from cattle, who eagerly nip the tender sprouts, and greatly injure the stem. The hair from a raw hide, with all the impurities adhering, if laid in small quantities, near the roots of the thorn, have been found sufficient security from the teeth of cattle. The cows will not approach near hedges thus defended.

INCLOSURES.

INCLOSURES.

IN every answer received to the question, "whether inclosures have increased, or decreased population? the reply has universally been, increased."

And how can the fact be otherwise upon rational grounds? In consequence of inclosures and division, every occupier has unquestionably the means of cultivating his lands to the best advantage to himself; but he cannot effect this without affording advantages to the public at large. Superior cultivation requires more labour, which requires a greater quantity of hands. The lands yield increased returns; and produce both means to increase population, and give food to the increase upon better terms.

As to increase of rent, the lands formerly in common fields, but now divided, have doubled, in many instances trebled, their rents immediately to the landlords; have yielded greater profit to the tenant; and have afforded more means of subsistence to the public.

The commons, or uncultivated lands, which heretofore have not yielded profit either to the proprietor or public; have increased in their value from—nothing, if starving a few geese, lean kine, producing—weeds, heath, &c. can, with propriety, be called nothing, or, to give some better *ratio*, from one to thirty *per cent.* * In many instances, the cultivated wastes, have proved more fertile and productive than the old lands; if, therefore, the foregoing pre-

* Mr. Wilkinson's improved moss land; was, before draining, worth from 7 to 10s. *per acre*, is now worth from £. 4 to £. 5 *per acre*.

Worbrech Moor, in Walton, inclosed, in 1761, was not worth 11s. *per acre* in its uncultivated state, is now well worth 30s. *per acre*. After the inclosure act was obtained, and a division made, the fee simple of several lots was sold after the rate of £. 3 *per acre*, large measure.

mises.

misers be well founded, the public have gained 30 *per cent.* of additional employment and additional produce, by the improvement of wastes and commons; and the proprietor has gained, not indeed 30 *per cent.* for he has the expence of the improvement first to deduct; but, on a moderate calculation, an addition of 10 or £.15 *per cent.* to his estate, on the capital advanced.

The surveyor has been informed of only one instance where an attempt to improve waste lands has failed.—Elland Moor, near Lancaster, notwithstanding lime has been laid on, and the ground treated according to the usual custom of improving wastes; yet, after a few crops taken, it seems verging back towards its original state of poverty.

WASTE LANDS.

In this county there are large tracts of waste lands, not less than five hundred and eight thousand, five hundred acres, according to Mr. Yates's statement, who took the pains to calculate the number for this particular purpose.—He makes the lands, under the denomination of moss, or fen lands, to be twenty-six thousand five hundred acres. Moors, marshes, and commons, to amount to four hundred and eighty-two thousand. Why seek our distant countries to cultivate, whilst so much remains to be done at home?

Many of these lands are incapable of tillage—some consist of mountainous tracts, craggy, steep, and barren. These are employed for sheep walks, not the most fertile, others of low swamps, overcharged with stagnant water;

from which a sufficient fall has not yet been discovered to draining. Many of the wastes covered with underwood, and others, have been planted with varieties of forest trees. Sir Harry Houghton proposes to plant Withnell Moor, a tract of about eight hundred acres, with such trees as, upon trial, shall be found to agree with the soil. Several parts are allotted out, in what are termed dales, for the purpose of paring of the surface for fuel—a pernicious practice, which injures the land, and affords but a very indifferent fire.

There are many thousand acres capable of being cultivated, and made into either arable, pasture, or meadow land, of the very first quality, provided these wastes were inclosed, divided, and improved; and, to effect which, there is neither want of inclination, or spirit, amongst the inhabitants. But there is a want of a general inclosure bill, to facilitate that troublesome business, and render it more expeditious and less expensive.

R A T E O F W A G E S.

THE price paid for different kinds of labour, varies more in this county, than probably in any other in the kingdom. An ingenious correspondent observes, “that the rate of wages is in proportion to the distance of townships from the seats of manufacturers; *e. g.* at Chorley the wages of a common labourer 3*s.* with ale; at Euxton 2*s.* or 2*s.* 6*d.*; at Ecclestone 1*s.* 6*d.* or 2*s.*; at Mawdsley and Bishham, I am told, you may get them, in harvest time, for 1*s.* 2*d.* and 1*s.* 4*d.*; in Wrightington the price of labour was lower two years ago, than the last mentioned sum, and does not now exceed it.”

H

Under

Under this head it may not be improper to give the following statement of different prices of labour, &c. at two periods; taken by the surveyor after a residence of thirty years in a village where no manufactory has yet been introduced—*Wulson, near Liverpool.*

A comparative price of labour, and other articles, in the course of thirty years, taken April, 1791.*

In the year 1761.			In the year 1791.		
	£.	s. d.		£.	s. d.
Head-man servant wages					
per ann. . . .	6	10 0		9	9 0
Maid servant . .	3	0 0		4	10 0
Masons and carpenters per					
day	0	1 2		0	2 2
Labourers wages †	0	0 10 11.6d.	1792, 0	1	8½

* At the same time was taken the number of inhabitants, under their various denominations and occupations; number of horses, cows, &c. in the village; quantity of grain grown, &c. a copy of which was lodged in the parish chest (the surveyor being churchwarden that year), in hopes that more ingenious successors in that office might improve upon the list, and occasionally register peculiar circumstances or events. This was done without knowing that the President of the Board of Agriculture was then engaged in a similar work over the whole kingdom of Scotland; which his manuscripts will be completed in the course of the year 1794.

† The hours in summer should be from six to six, allowing half an hour at breakfast, and one hour at dinner; but the labourer in general now comes, or rather starts from home, towards his work, at about seven o'clock in the morning, nor continues his labour till the hour of six, as was the practice 30 years ago—but calculates the time to be taken in his walk home where to arrive at the hour of six. In the winter the hours of labour must of course be curtailed, as are yet, in some places, the wages—but the practice, of late, is become less general.

‡ And an attempt to raise them in the Spring of 1793 to 2s. per day; but the calamities, which came on at that period, produced a great change, and every effort was made to procure employment to the industrious.

In the year 1761.	£.	s.	d.	In the year 1791.	£.	s.	d.
Mowing <i>per</i> acre	0	3	0	0	5	0*	
Threshing wheat <i>per</i> score	0	5	0	0	7	6	
Barley and beans	0	2	6	0	4	0	
Oats	0	1	8	0	2	6	
Taylor's wages <i>per</i> day and food	0	0	6	0	1	2	
Thatcher <i>per</i> day	0	1	0	0	2	0	
Butcher for killing and cutting up a pig	0	0	8	0	1	6	
Ditto calf, and selling carcase	0	1	0	0	2	6	
Ditto a cow, and selling carcase †	0	2	0	0	5	0	
Price of good cart horses	10	0	0	25	0	0	
Pair of men's shoes	0	3	6	the same person 7s. 6d.			
Sett of horse-shoes	0	1	0	0	1	8	

Carpenters work—price of several particulars used in agriculture.

In the year 1761.	£.	s.	d.	In the year 1791.	£.	s.	d.
Large cart 7 feet 3 inches, wheels 5 feet 2 inches high, with flakes, complete, twice painted (to the carpenter)	5	0	0	9	4	0	
Wringing a pair of wheels	0	18	0	1	15	0	

* Eight yards to the rod.

† The journeymen butchers in Liverpool, about thirty-three years ago, slaughtered at the following prices: a bull 2s.; a cow 1s.; a sow 6d.; a sheep 1½d.; a calf 3d.; of the last, about twelve were one day's work; also one score, or two dozen of sheep, were a day's work. The prices are now doubled.

In the year 1761.		In the year 1791.
	£. s. d.	£. s. d.
New axle-tree, and work	0 4 0	0 6 6
Wheel-harrow, and trundle	0 5 0	0 12 0
Plough (wood work)	0 7 0	0 11 0
Harrow, 3 feet 6 inches	0 3 6	0 5 6
Pair of homes	0 0 6	0 0 9
Spade shaft	0 0 4	0 0 6
Common five-barred gate	0 5 0	0 10 0
Ladders, 15 staves, <i>per</i> staff	0 0 3	0 0 4
Ditto from 15 to 30 staves	0 0 0	0 0 6
Swipels, stens, and sets for carts	0 0 2	0 0 6
Wheat <i>per</i> bushel		0 7 6
Barley		0 3 6
Oats		0 2 6
Beans		0 4 6
Wheat-straw <i>per</i> load	0 5 0	<i>per</i> stone of 20lb. 0 0 3½
Barley-straw <i>per</i> thrave	0 0 2½	0 0 6
Oat-straw <i>per</i> thrave	0 0 5	0 0 9
Butter <i>per</i> lb. from 5d. to 8d.		from 8d. to 11.
Sweet milk <i>per</i> quart	0 0 1	0 0 1
Eggs, two and three for 1d.		from 1d. to 2d. <i>per</i> egg.

N. B. expended upon the poor from Easter

1760, to Easter 1761	22 3 2½
From Easter 1790, to Easter 1791	115 14 1

There have been twenty additional houses built in the space of time betwixt 1761 and 1791.

The above statement seems to confirm the opinion of some, "that the poor-rates increase as the price of labour advances;" which, in some places (as appears from the answers given to the agricultural queries), have been as high as nine, eleven, and thirteen shillings in the pound.

PIECE WORK, OR BY THE GREAT.

Making new fence, ditch, hedge, bank, seven fods, in height, backing, and covering with these fods, planting quicksetts, bearding, from 1*s.* 6*d.* to 2*s.* *per* rood.

Cutting hedges, opening and scouring the ditches, putting fresh earth to the quicks, from 8*d.* to 14*d.* *per* rod.

Delving or trenching with dung, one split or spade deep, 10*d.* to 1*s.* 3*d.* two splits 1*s.* 6*d.* to 1*s.* 8*d.* *per* rod; digging for peas and beans 6*d.* and 8*d.* *per* rod; double gutters 1½ foot deep, 4½*d.* to 6*d.* *per* rod (of 8 yards); common spade gutters 1½*d.* to 2*d.* *per* rod; feighing two yards deep, or if under 2½*d.* to 3*d.* the solid yard.

Mowing from 3*s.* to 4*s.* *per* statute acre; reaping from 3*s.* 6*d.* to 5*s.* *per* acre.

Thrashing is done sometimes by the thrave, and sometimes by the bushel—the price generally paid by the piece is about one twentieth of the value of the grain, or one bushel of the grain thrashed at every score.

DRAINING.

THERE has been much draining done all over the county; but there remains much still to be done: but as the spirit is gone forth, and the good effects are evident, so much so, that in many instances that have been mentioned, the land has been so far improved, as to repay the costs by the superior crops, which followed this improvement, even the very first year, after the work was executed.

J. Wilkinson, Esq. Castle-head, has drained to the amount of 1000 acres of fen lands; Waston Moss has also
been

been drained. Trafford, and a large part of Chat Moss *, are taken by Mr. Wakefield and Mr. Roscar, on a long lease, with intention to drain. Near one hundred acres are already cut upon Trafford Moss, upon which Mr. Wilkinson's plan is pursued, of making use of the materials upon the spot; cutting through the moss at different intervals of time; by which is given opportunity for the water to escape, the ground to acquire more firmness, the walls to grow harder; and which would otherwise close, at a distance from the bottom, a large shoulder is left, whereupon a lentil is to rest, cut from some solid turf, about 18 inches in length and 9 inches square, and which, being exposed to the sun and air, contracts its dimensions to nearly one half, acquires firmness, hardness, and ability to support the matter with which the surface of the drain is covered.

The fens or moss lands thus drained, have acquired solidity, and become fertile meadow, and corn lands; and, in consequence of the drainage, have sunk two feet lower †. Waston Moss, and Mr. Wilkinson's, is become very rich meadow and pasture land.

There are variety of drains besides the above; a piece of peat, the usual shape and dimensions of the common turf, has been made use of, after piercing the turf with a kind of


* " Chatley More traft up within a mile of Morley-hall, and destroyed much ground with mosse thereabouts, and deftraid much fresch water fish thereabouts, first corrupting with stinking water glasebrooke, and so glasebrooke carried stinking water and mosse into mursey water, and mursey corrupted, carried the rowling mosse part to the shores of North Wales part to the Isle of Mann and sum into Ireland. In the very topp of Chartley More, where the mosse was higest and brak is now a plane valley as was in tymes paste, and a rille runneth in hit and peaces of smaul trees be found in the bottom."

LELAND, vol. VII. p. 49.


† Mr. Wilkinson's moss, is, in some parts, supposed to be sunk six feet lower—before the drainage, the windows of the third story of Mr. Wilkinson's house just appeared from a certain point; but from which place, at present, the windows on the first floor are plainly seen.

Since writing the above, Mr. Wakefield observes, that an actual measurement has been made, and the fall of the moss is about four feet and a half.

punch

punch when wet, by which a hole is left about three inches square, a little arched at the top in this form , and which are placed, after being hardened in the air, side by side. For this the Agricultural Society at Manchester rewarded the inventor with a premium.

Common brick, with thin slates at the bottom of the drains, have been frequently used. A double brick, with a hollow through the middle, is an article cheap, expeditious, durable, and sufficient, for the purpose. Broken stones have been frequently used, laid loose and open, the drain

first cut in the form , and filled up as far as the dotted

line. But the cheapest are the sod drains, made by J. B. Bayley, Esq. Hope, near Manchester. The implements and manner are particularly described in Dr. Hunter's Georgical essays. I viewed the drains, which have already stood twenty years. The entrances have generally a fence of brick, or stones, to secure them from the feet of cattle. This work is performed at sixpence *per* rod: men were employed in cutting new drains when this well-managed estate was surveyed.

More attention should be paid to draining marle pits than is generally practised; for, besides gaining considerable space of ground by this means, the stagnant water frequently overflows, and starves a large space, so far as it extends, and till its effects are destroyed by some ditch, &c. which cuts off the nuisance by carrying the water off*.

A good practice, by S. Fazakerly, Esq. should be noticed. When fall sufficient into the main drain, to take off the water from some particulars spots, is not afforded; he then sinks a kind of well where the spring arises, the side of which he secures by stones or brick, and thus collects all

* J. J. Atherton, Esq. has done much in this way.

the stagnant water, which spreads considerably into one point, and by which he can get rid of it. Mr. Bayley of Hope, mentioned an improvement upon this mode, and that an auger hole has been found effective if properly applied.

Mr. Eccleston has applied his miner, this present year, for the first time, with apparent success. Walked over a field where the miner had been drawn through certain intervals only once the run of water was not trifling, and the ground seemed firm—the expence of this operation is very inconsiderable.

PARING AND BURNING.

PARING and burning has been too much practised; its destructive effects are but too apparent upon many farms where burning the land has been frequently repeated. Great crops may have been procured, by this means, for a few years; but the soil in the end is destroyed away. Upon strong bent, heath, fungous moss, matted rushes, or turfy peat lands—the practice may be good, and if only repeated till those bodies are destroyed, is attended with success; and instead of injuring, proves beneficial.

Paring, with the burning, is a laborious and troublesome mode of cultivation; its success depends upon circumstances, and one crop out of three, is, in many instances, the amount of what may be expected to reap in security. After the sods have been dried and burned in small heaps, the ashes are spread upon the ground whilst yet warm, and the ground ploughed, sowed, and harrowed in immediately, if the weather permit. If the ashes get wet, or grow cold before this operation can be effected, they are in-

WOODS.

TOWARDS the coast it is with great difficulty that wood of any kind can be raised: the tops of the trees, hedges, and even the corn in the fields (in general) bend towards the East, as if shrinking from the Western gale, brought over the Atlantic ocean. In the Northern part there are many acres of coppices cut down every fifteen years, and burned into charcoal. Toward the central part, of the county there are some good woods; the timber healthy: there is also a considerable quantity grown in hedge rows; but sun-shine is generally preferred to shade—timber wood seems on the decline. There are many excellent plantations about gentlemen's seats and pleasure-grounds, well attended to, secured, and in a thriving state.

Mr. Leigh Philips observed, that the alder was of late years become an article of great consequence, from the demand of both its wood, (which make the best poles whereon to hang cotton yarn to dry, that wood acquiring a fine polish by frequent use, nor does this wood splint by exposure to the weather) and its bark, which sells at nearly one penny *per lb.* as an article for dye*.

That the alders planted on the side of the Duke of Bridgewater's canal, upon the loose grounds, for a certain distance, by way of security to the banks, had not only answered the original purpose, but had proved a profitable plantation—the alder admitting of being cut down every fourth or fifth year. There are many acres of land, at present of little value, which, if planted with this wood, might probably turn to a good account.

The osier willow is at present in such demand for hampers, &c. and there is such a scarcity of that article, that more than twenty pounds a year, have been made out of a single acre of land planted with osiers.

* In Sweden they make beautiful tables of the root of the alder.

PROVISIONS.

BUTCHERS meat, like other articles in this county, varies in price. It is generally dearest towards the South, and South East, many cattle being driven from the Northern part to supply those districts; but still, it is there generally more than a penny *per* pound, under the London market-price. Corn, at Liverpool, is always above the London price, nearly one shilling *per* bushel, as appears by the returns published. In those parts of the county, where oat-meal is chiefly used for bread, &c. when enquiry was made after the price of provisions, the first answer was universally, the price of oat-meal, the staff of their life.

At Manchester market, October 9, wheat sold that day from 33 to 34*s.* *per* load, as it is termed, or sack, of 16 score. Oats 33 to 34*s.* *per* load of 5 Winchester bushels, Beans 35*s.* *per* load of 5 Winchester bushels. Potatoes 4*s.* 6*d.* to 5*s.* *per* load of 12 score, 12*lb.* washed; unwashed, thirteen score.

Fine flour 36*s.*; seconds 34*s.*; thirds 26 and 28*s.* *per* 12 score; oat-meal 36 and 37*s.* *per* load, of 12 score.

N. B. No barley at this market.

Cheese from thirty to fifty shillings *per* cwt.

The price of provisions are more likely to fall than to advance, if trade continues to stagnate.

ROADS.

R O A D S.

Mr. Yates observes, there is a greater length of roads in this county, in proportion to its extent, and quantity of acres, than in any other county in the kingdom, and of so little public utility, that many might be spared; and he also remarked, that if early exertions had been made upon this head, land, sufficient in value, might by that means have been obtained, to have kept the whole remaining roads in proper repair.

This opinion may have been too sanguine, and the best opportunity, for accomplishing so desirable a work, may have now passed. But, no doubt, much advantage to the county might yet be obtained by proper exertions, if roads, that at present are of little public utility, were stopped, the lands sold, and the cash arising, appropriated to support the remainder.

In proof, however, of this assertion, of the vast length of roads in this county, it is generally asserted and believed, that the township of Gosenargh only, which is about four miles square, is computed to have length of roads equal to its distance from London, or more than 200 miles*. The township of Walton, near Liverpool, which only contains 1988 statute acres, has a public road two miles and a half in length; parochial roads, eleven miles two furlongs, besides occupation roads.

In the Northern, and North Eastern parts of the county, materials for making roads are found upon the spot, the lime-stone, which, when broken, binds together, and makes

* The surveyor has made an attempt to have this singular fact ascertained—but has been able to secure no farther intelligence than general assertion, and general belief.

an excellent road; but in the midland and Southern parts, the materials, except what the rivers afford, are brought from the Welsh and Scotch coasts, and at considerable expence.

These Boulder stones are not broke, but paved. The whole expence of which is from 1*s.* 2*d.* to 2*s.* *per* square yard, according to the distance of the materials to be carried. Two quarries of pebbles have lately been discovered. Copper scoria or slag, from two works, Ravenhead and Liverpool, have been successfully tried. This article makes an excellent side road to the pavements, and is preferred to pavement both by the horseman and carriages.

Great exertions have been made of late years, at very considerable expence*, to improve the roads; the effects of which are very apparent, both upon the public and parochial.

With respect to improvements, an ingenious gentleman † observed, that the tolls in general ought either to be raised, or the number of bars increased, in order that the public at large, might contribute a proper quota, for their ease in travelling, by the improved state of the road, and the farmer, &c. of course eased; and, candour must allow, that the facility, expedition, and security of travelling over the roads, in their present state, is worth more than double the money paid for this convenience. Some method should be devised to ease the labourer, and lay the burthen upon the traveller. The tenant has frequently been charged with an unexpected tax, amounting to 4 or 5*s.* in the pound, upon a short lease, when a fine has been levied; and

* So great, that the time when Mr. Yates took his survey about ten years since, the average paid through the county, was not less than eighteen-pence in the pound.

† J. B. Bayley, Esq.—We are deprived of this gentleman's promised communications on account of indisposition. May so valuable a character to society be long preserved!

though,

though, in the issue, this class receives as great benefit as any other, still some ease should be devised to assist those contingent possessors, by more heavily taxing the travelling stranger.

Under this head, the indulgence shewn to the mail coaches in their exemption from tolls, merits reprehension.

In the first place, the object is too trifling and mean, for the interference of government. It is also an encroachment upon private property, upon a capital; the interest of which was expected to be paid upon the credit of certain tolls, with an accumulating surplus, to repair the damage done to the roads by the passing of these carriages—and with the remaining portion, to liquidate the principal advanced to accommodate the public in the execution of these undertakings *. But here is a check upon these spirited endeavours by encroachment. If the price at present paid, for the carriage of the mail, be not sufficient, it should be increased by an addition taken from the common stock.

But the profit arising to the proprietors of mail coaches, is at present great. The surveyor was informed, lately, of the following statements as proofs of the assertion: The receipts of the mail coach from London to Liverpool, and backward, amounted, in the course of one month, in the spring of the present year, to twelve hundred pounds †. The other is—that the profits arising from the length of one stage (10 or 12 miles) were lately sold, and transferred, for the neat sum of three hundred pounds.

* Mail coaches prevent much travelling post—consequently injure the toll bars more ways than one.

† These statements are here given as related, and are not to be depended upon as authenticated facts. When a subject becomes a topic of conversation, there are generally some grounds for the assertions, which should however be received, till fully authenticated, with diffidence.

As

As this business is, at present, conducted in a spirited manner, and probably the most expeditious, safe, and neat conveyance in the world, the proprietors, and conductors, of such public accommodations, ought to have, not only certain, but handsome profits. What is here objected to, is the infringement upon private property. And if these tolls were not allowed, they would be charged at last upon the passenger, upon whom they ought certainly to fall.

But, again, the tolls granted to be taken for this species of carriages, if it were even extended to the mail coaches, is not sufficient for the damage done by them, in proportion to the rates paid, and the damage done by other carriages, to the roads.

The weight of a mail coach, loaded with passengers and parcels, may be between two and three tons, the heavy coach nearly three tons.

The effects of four horses, scampering and pulling with all their might, are very injurious to the roads; for, after the stones have been nearly displaced by this exertion of the horse-feet (very different to the effect of a road-horse), followed by a heavy carriage, supported and dragged upon four narrow wheels, every obstruction is displaced by the violence of the motion. The slow pace of a waggon, moving upon a nine-inch surface, or the heavy-loaded cart, under two or three tons burden, upon six-inch wheels, makes a comparison strong in favour of these carriages.

Again, the tolls arising from many turnpikes, are very insufficient to maintain the roads. The township of Walton, at the present juncture, is meeting the trustees of the public road, which runs through that district, with not a less sum than four hundred and thirty pounds, besides statute labour, upon a length of two miles and a half, whilst the same township is burdened with other roads of the length of eleven miles, two furlongs, and a half, as before observed.

All

All the townships through which this turnpike passes are, at present, contributing their aid, and that to a degree, in some places not a little burdensome to both tenant and freeholders; of which the township of Aintree is a strong example.

FARM HOUSES.

SOME of the old built farm houses are ill constructed; and, what may appear extraordinary, in a country where slate abounds, and straw sells at an advanced price, are still thatched, and the preparation of the straw for thatch is but ill managed.

The more modern buildings, by the Earl of Derby, and many other landholders, are useful constructions; and in general sufficiently spacious to contain the crops both of hay and corn.

Farms of sixty pounds a year, in Lancashire, have offices frequently as large as would be thought to suffice, in other countries, for farms of three or four hundred *per ann.* where it is the custom to stack their corn, which is not the general practice in Lancashire.

Mr. Boyer, of Lantham-house, has favoured the surveyor with the following plan of a farm house and offices, which have been lately erected upon B. W. Bootle's, Esq. estate.

"A farm house contains house, parlour, and kitchen (which is considered the most useful part), and pantry below stairs, three lodging rooms, and one cheese room above. Barn contains, at one end, stable and granary, and hay-loft over; at the other end, shippens (not cow-houses), and hay-loft over. The cows stand head to head, save a passage between to feed them; in the middle thrashing-floor, corn, and hay."

L E A S E S.

MANY farms, are held by leases on three lives, on which a fine has been paid, and a small annual rent reserved; and sometimes an addition of *beon services*; which last system seems much on the decline. These leases are generally estimated at about fourteen years purchase.

The leases upon years, are, from seven, eleven, to fourteen; but chiefly seven. Covenants in some to pay the rent the day the tenant enters upon the premises. A covenant for the security of the landlord, but not exacted except on emergencies. The time of entering upon the lands is Candlemas; the buildings, May-day. Usual covenants are, the landlord to repair buildings, the tenant carting the materials. The tenants to discharge all taxes, serve all offices, and perform all the duties charged upon the farm.

Tenants are restrained, by covenant, to the quantity allowed to plow, sometimes to one third, sometimes to one fourth, of the whole; restrained also, of late, to the number of crops to be taken at one breaking up of the ground—sometimes to four crops, and sometimes only three allowed. Tenants restrained, by covenant, from sowing wheat upon bean stubble, or any other stubble from which a crop has been taken the same year. The tenants, by covenant, restrained from paring or burning, except moor lands.

The tenants sometimes restrained, by covenant, from selling either hay or straw, but to consume the whole upon the premises.

The tenants, by covenant, restrained from selling off his stock till the close of the year, at the expiration of his

term, that the greater quantity of dung may be raised from the produce consumed.

The tenants allowed to take off three fourths of the wheat growing upon the premises at the expiration of a lease. The succeeding tenant to have the remaining quarter.

A succeeding tenant to have permission, after Candlemas, at the expiration of a lease, to occupy certain portions of the out-buildings, by clauses founded for the accommodation of his horses, hay, &c. necessary for the spring feeding, on the new tenant entering upon his farm.

MANUFACTURES.

MANUFACTURES have been carried on to a very considerable extent in Lancashire.

The cotton-manufactory through all its branches *, which includes a number of leading trades—*bleachers, dyers, printers, &c.* has become of astonishing extent and importance.

* The first piece of cotton, manufactured from British growth, was at Manchester; from cotton grown in the grounds of J. Blackburne, Esq. M. P. of Orford, in Lancashire: seven yards and a half, of one yard and a half yard-wide muslin, from four ounces of raw material. It was a most beautiful piece of cloth, proposed to have been made up into a dress, for Mrs. Blackburne, in which she intended to have appeared at Court, June 4, 1793; but was prevented by a change of dress, occasioned by the loss of a relation.

To what a degree of perfection the muslin manufactory is arrived, the following may serve to convey some idea. In the year 1791, a single pound of cotton, was spun to a fineness of ninety-seven post miles in length: the muslin, after being spun, was sent to Glasgow, to be wrought, and after which was presented to her Majesty. Three pound of cotton, which, in its raw state cost 7s. 6d. cost the sum of 21s. in this stage, when it was wrought into yarn only. It was spun by one Lomat, at Manchester, upon the machinery called mules.

K

The

The silk trade, from the raw silk, through its subsequent branches. The woollen-manufactory *, through all its branches—hats the same †—cast-iron—copper-works ‡—paper-manufactory—pins and needles. An incorporated company for making plated glass, vitriol works, glass works, stockings, glue, lamp-black works, white-lead works, salt works, nailors, tobacco-pipe makers, tobacco and snuff manufactories, black and brown earthen ware, English porcelain, clock and watch makers, tool makers for both these branches for all the world, sugar refiners, long bow, &c. makers.

Saddleworth, which borders upon the county, and which formerly only wrought coarse woollens, has gained lately, and now works, the fine Western woollen cloths.

A large manufactory, for the fabrication of fancy goods, has lately been established at Tildesley, by Thomas Johnson, Esq. where a village has been built since the year 1780, which had then only two farm houses, and nine cottages, has, in 1793, 162 houses, and a new chapel erected. The village contains nine hundred and seventy-six inhabitants, which employ three hundred and twenty-five looms.

* Woollens have of late been manufactured without either spinning or weaving, and after the manner of hats.

† A patent has been obtained, and a work established, to manufacture hats, by machinery; moved by water.

The several modes of accelerating labour, have been always stoutly resisted by the labouring class, when the different machinery was first introduced; but the issue has hitherto proved a source, from which not only employment, but the price of labour has increased, notwithstanding that labour has been so much abridged.

‡ The consumption of coal at Ravenhead is, seven hundred tons per week; and however destructive the smoke may be to vegetable life, it seems more favourable to animal. Since, in the space of fourteen years, notwithstanding between two and three hundred people are constantly employed in the copper-works there, belonging to the Paris Mine Company, not one person, employed in the works, has died.

Manchester

Manchester being the principal repository for these manufactures, has become the great center, to which not only the country retailers, but merchants, from all quarters of the kingdom, and foreign parts, resort; and this has induced several capital woollen houses to settle at that town; and this mart is chiefly confined to one street (Peel-street), in which a single room frequently lets from 50 to 80 guineas *per ann.* Two cellars were let in October, the present year 1793, one 63 yards square, and the other 78 yards square, for 80 guineas *per annum.*

The trades, and different occupations, upon which the maritime state depends, have not, on this occasion, been noticed; because they are the same in all counties where navigation is carried on*.

With respect to the good or bad effects that manufactures may have had upon agriculture—this important question merits much attention; the answers to which, in some letters, have been concise, and discharged by one single word, *e.g.* one answer has been “advantageous;” another answer “injurious;” but without either argument or proofs to support these laconic assertions.

The more extensive answers, however, shall be faithfully stated.

Manufactures have wrought a change in the agriculture of the county; the growth of grain is annually and gradually on the decrease. The importation from foreign countries, is, of course, upon the advance; the diminished state of cultivation is one cause, and the increasing population is another; and by the joint operation of these two, the importation of grain and flour, used chiefly in this county, is almost incredible. To prove which, the surveyor has been favoured with the following extracts from the Custom-house books, faithfully, and with no small trouble, collected for this occasion, by Mr. Yates.

* A sketch of some of which will be given in the intended History of Liverpool.

WHEAT, FLOUR, &c. imported into Liverpool during the years 1790, 1791, and 1792, from foreign parts.

Wheat.	Barley.	Oats.	Beans.	Rye.	Pease.	Wheat-flour*.	Oatmeal.
Qrs. Bu.	Qrs. Bu.	Qrs. Bu.	Qrs. Bu.	Qrs. Bu.	Qrs. Bu.	Cwt. Qu. lb.	Qrs. Bu. lb.
1790 4	14,404 5	204,154 1	17,492 4	1,288 0	69 6	22,000 2 11	6,874 7 33
1791 1	8,213 1	171,531 7	4,467 1	5,540 2	17 1	51,654 0 25½	4,128 5 0
1792 0	19,482 4	228,737 3	27,821 1	2,576 3	1,287 3	6,489 2 9	9,125 1 8

and other grain, imported into Liverpool, &c. in the years 1791 and 1792.

Grain exported coastwise.

Wheat.	Barley.	Meal.	Rye.	Oats.	Year	Wheat.	Barley.	Meal.	Rye.	Oats.
1791	63,130	46,927	2,290	9,667	1791	30,912	6,597	2,142	3,975	12,921
1792	62,557	35,375	3,456	38,797	1792	5,148	3,052	4,197	3,440	16,078

As to the quantity of fine flour, both imported, and at present consumed in this county, Robert Winstanley, a miller, now residing about seventy, says, that he remembers the first dressing-mill fitted up in this county, which was at Walton, near Prescot, at the time of a scarcity, was threatened to be demolished by the mob, for dressing fine flour to feed the rich (a); and on which was converted to another use, to which it remains to this day. That afterwards he, with an elder brother, who had learned to dress flour, fixed up a dressing machine at Boodle-mills, near Liverpool; which was the second mill in the county, where and upon blue stones (b), and afterwards dressed through a cloth. Before this, the flour was dressed, and sifted at home in ground at the mills, and the fine (or London flour as it was then termed) was purchased, on extraordinary occasions, at the rate of up into pounds, similar to the present mode of making up sugars in blue papers. These facts are confirmed by a letter from, Bart. to the surveyor, dated Dec. 1, 1793; and that mill was then the property of his uncle, Sir H. Houghton.

There was more waste then, than is now; too great a portion of flour being left in the bran: which improvements in this art have since effected, and that to a degree, as to grind almost the whole of the bran into flour. The first mode of use of for grinding fine flour in preference to the grey-quarry stone, was the blue boulders sawn and cemented together, acquiring a polish, after some usage, was insufficient; afterwards the French-stone, a porous, keen, hard stone, was in common use.

This extract, from the Custom-House books, with both the imports and exports, will shew the great consumption of grain in this county, and how inadequate the land, in its present state, is for the supply of its inhabitants.

The exportation of corn, sent abroad, is trifling; and, except upon the Western borders of Yorkshire, upon the Eastern boundaries of Cheshire, and some parts of Derbyshire, the corn imported into Liverpool, is chiefly for the consumption of Lancashire.

The advance of wages, and the preference given to the manufacturing employment, by labourers in general, where they may work by the piece, and under cover; have induced many to forsake the spade for the shuttle, and have embarrassed the farmers, by the scarcity of workmen, and of course advanced the price of labour.

The poor rates fall, with equal burden, upon the farmer, as upon the master manufacturer.

The water is sometimes so damaged by dye-houses, and other works, erected upon rivers, as to be rendered not wholesome to the cattle, and destructive to fish.

On the other hand, the advantages that have been held forth, have been an increase of population; as that which constitutes the riches and strength of a country.

Increase of the value of lands, and also of provisions. The farmer particularly has an advance on the price of his cheese, his butter, his fatted cattle, his milk; also straw, which, in 1760, sold at the advanced price of 8*d.* *per* stone in the Spring at Liverpool; dearer, probably, than ever was known even in the London market. Hay is little dearer than thirty years ago, except on extraordinary occasions—hay is, at present, about 8½*d.* *per* stone, owing to a slight crop—thirty years ago 6*d.* *per* stone.

The improved mode of cultivating potatoes has reduced their price of late years, notwithstanding the consumption by cattle has been so great. The laws, admitting importation

tation of grain, prevent the farmer reaping an advance of price when there is a failure of crop; and the value of corn, is, by this means, kept within a small compass. The only advantage the farmer reaps, is, from additional quantity, never from advanced price, which is not the case in regard to hops, or sugar, or other articles produced by the soil, either at home, or in our colonies.

USEFUL PRACTICE.

THE practice of managing the milk for butter in this county, might be of service, if followed in other places. Except in the county of Chester, it should seem (as the surveyor understands) peculiar to this district. The mode is, dividing the milk into two parts; the first drawn, being set apart for family use, after being skimmed; the cream of which goes into the vessels appropriated to receive it; as also, the whole of the second, or last, drawn milk, provincially called *afterings**; these two being mixed together, are stirred, but not a great depth, to prevent the bad effects of foul air accumulating on the surface: and kept, according to the season of the year, exposed to the fire, to bring on fermentation and sourness; and which is accelerated by what may remain in the pores of the vessels; to prepare which, they are not scalded, except after having contracted some taint: and then to accelerate a fermentation, which the quicker it is the better, the vessels are sometimes rinsed out with sour butter milk; in which state it is ready for the churn; and, in consequence of this treatment of the milk, more butter is obtained, and

* About one half from each cow, each meal; but the quantity taken off, in some measure depends upon the consumption of milk in the family.

of a better quality, than if the milk was churned sweet. And the butter milk, as it is called, after the butter is extracted, instead of being given to the hogs, as is generally the practice in many counties, becomes, under this process, an excellent food for man; both wholesome, and pleasant, as before-mentioned.

FEEDING CATTLE.

The following practice, by an experienced farmer, (Mr. Henry Harper, Bank-hall) merits notice—here given in his own words.

“ I HAD one year six cows that I house-fed, all at one time, and nearly all of an age; and by way of experiment, I fed two with turnips and ground corn; and two with boiled potatoes and ground corn; and two with raw potatoes and boiled corn: they were all put to feed at one time, and when I thought them fit for the market, I sold three; one from every lot, and went to see them dressed. Those two fed with ground corn and turnips, and ground corn and boiled potatoes, there was little or no difference; but that which was fed with raw potatoes and boiled corn, was better in flesh, and more fat within side, than the other two, by a fortnights keep; and this was not only my opinion, but the butcher's who killed them: the other three I kept three weeks longer; and when killed, they were proportionably nearly in the same state with the others, but better by being kept the longer; so I prefer boiled corn of any sort of grain, and think it more forcing, either for milk, or feeding. They had all one and the same quantity of corn, &c.”

Boiling

Boiling corn, has been practised by some others, with good success. A little linseed improves the quality. Hay seeds, that drop out of the hay, should be carefully preserved, and worked up in mixtures of potatoes or oats, either scalded or boiled. The surveyor has experienced the good effects of hay-seeds, upon his cattle, for many years; a neat farmer, lately talking upon this subject, observed, that the seeds of many weeds might be converted to good use; and he spoke with confidence of the feeding quality of some of them.

WATERING LAND.

THE following neat practice, may be worthy of record, as the thought of an ingenious man, game-keeper to K. W. Bootle, Esq. Latham; for which he was honoured with a silver cup, by the Agricultural Society of Manchester. From the ditches above his house, he collects the water, and brings it past his buildings, from which his lands have a regular descent. This water carries along with it all the drainings from the farm yard, which is thrown upon the lands according to the usual custom of irrigating:—but he has sunk a reservoir, the sides of which are secured with pounded clay: in this reservoir he preserves his water, sometimes till a dry season; then throws it upon the land, when the earth wants moisture. He puts mud into the rivulet through which the water runs, and finds it of great service.

HAY

HAY MAKING:

IN the management and curing of clover, which, from the quantity of moisture to be evaporated from the plant, before it be cured sufficiently to keep, is attended with considerable difficulty, the following method has been practised, by Thomas Eccleston, Esq. that spirited gentleman so frequently mentioned.

The clover is collected together into small sheaves, and kept straight; then twisted together, in the top part, to admit the sheaf to stand upon its butt, or bottom end, when spread out, in the same manner that horse-beans have been frequently treated; and if these little bundles are not thrown down by the winds, they will resist more rain, if it should happen, than when lying on the surface of the ground; and if the weather be fine, having more surface exposed and open, the clover will cure the faster.

In making hay-stacks, besides making a chimney in the stack, by a basket placed in the middle, and drawn up by a cord, in order to suffer the air, generated by heating, to escape, and to prevent the stack taking fire, as mentioned in the "Survey of Middlesex," Mr. Eccleston cuts gutters in the ground, length-ways, and across, which he covers with planks, in that place whereon a stack is to be built. Through these trenches, in different directions, the outward air may enter, pass through, then ascend the aperture left in the stack; and, this continued circulation takes away the generated heat, or foul air, which, if confined together without any vent, might produce damage to the hay, or worse effects; and, by these useful precautions, he is enabled to collect his hay together at a more early period, and in a more juicy state; by which good practice, time is saved, and the quality of the hay improved.

L

Hay-barns

Hay-barns have of late been erected in many places, standing upon pillars, and covered with slates; sometimes with a bottom boarded with planks, open in the joints, perforated with holes, and lying hollow a space above ground, to admit a free circulation of air all under the hay. These buildings are useful, cheap, and, by their great convenience, in bad weather, and great preservation they afford to the hay, will soon repay the first expence.

AGRICULTURE SOCIETIES.

THERE has been a society of agriculture established at Manchester, for a number of years, and which is conducted with spirit; and the several premiums offered annually, have been frequently claimed, and adjudged to be given. A report is annually published, with the premiums, which are offered for the ensuing year, and a list of the persons to whom they have been already adjudged, are made public; but they have not yet published any volume of papers they may have received on different subjects; and of which they are in possession. The surveyor, when at Manchester, waited upon the secretary, and examined these papers, with a view of collecting out something that might have been of service to him in this report. The papers are many of them upon important subjects.

The Rev. Mr. J. Stainbank, of Halton-hall, writes, "That the principal great towns, through the different counties, at least where they choose to form themselves into societies, should be connected with the Board of Agriculture, as emanations from that great body, and be supplied thence with books of instructions, and other assistance

assistance during their infant state; and that each society, should adapt such a system of premiums, as would be most conducive, for exciting a spirit of agriculture in, and promoting the greatest possible improvement of, its respective district."

Similar hints have been dropped, by other correspondents, but not so fully explained.

SPIRIT OF IMPROVEMENT.

FARMERS in general are charged with being stupid, obstinate, and attached to old customs. In this county they do not altogether merit these harsh accusations—we have all our prejudices and attachments. They are, in general, a laborious, and certainly a most useful class in society. The hazards they have to encounter, from seasons, and other causes, leave no room for trials of uncertain experiments. After the grain has been deposited in the earth, the ground being previously prepared to receive it, in the most husbandman-like manner, still the successful issue entirely depends on a favourable season to vegetate and mature the grain. Mildews and blights, under these favourable aspects, may yet intervene; but should not any inauspicious appearance happen, and the reaper is prepared to gather the produce of the loaded fields, yet how often does the howling blast, scatter and disperse the hopes of the husbandman!

Again, the labours of the farmer are toilsome; his gains cannot be great, upon the most favourable calculations: namely, that from his grounds he should be enabled to raise three rents—one of course his landlord demands, another should arise to maintain his family, pay the hire of

servants, and support contingencies; the third; and last, toward paying interest of the capital advanced for stock, and afford an annual surplus to reward his labours.

That there is a spirit of ingenuity, and improvement, amongst the inhabitants of this county, has been frequently proved, and is yet, every day, manifesting itself, is very evident; but this is most apparent amongst the manufacturing class, and the reason is obvious—reward immediately ensues. The Glasgow manufactures till of late, have exceeded the Lancashire in muslins. Stimulated by emulation, in the neighbourhood of Bolton, they now boast they have at last, and but very lately, surpassed the Glasgow muslins in fancy-works. The same flame, since the fire is kindled, would equally shine amongst the farmers, as well as amongst the manufacturers, were the reward equally certain; still it remains to enquire, how a spark of this flame may be kindled. The farmer is not such a novice, and so totally blind to his own interest, as to be incapable of viewing the effects of skilful cultivation, however novel; and if, on repetition, this new practice be found beneficial, the great incentive to action, INTEREST, will equally operate upon one individual as another.

But how is the farmer to be convinced? he is told such are the customs, which succeed in other districts, but these assertions do not convince. Soil, climate, or other causes, may operate—he waits an example nearer home. Herein the landlords, the gentlemen of property, in the county, should interfere, and shew the example; and in which several spirited gentlemen have made great exertions in the introduction of many novel practices, and under great disadvantages; for not being able to execute, but only to direct, they have had both prejudice and ignorance to encounter. Their labour is always procured upon worse terms, probably £50 *per* cent. than can be obtained by the farmer or gardener, who can say to his workmen,

“ Com’r,

"Come, let us go dig together," even if hired, to be done by the piece, upon the usual terms, it will often be slightly performed.

But how many good effects, and what superior cultivation, has been produced within the space of half a century by these means, in a slow and almost imperceptible manner ! The very village in which this account is written, half a century ago, was not able to supply, from its own meadows, an inferior number of cattle, with a sufficiency of hay, for winter stock. What was wanted of this article was generally purchased from the Sefton meadows.

There is a greater quantity of live stock, at present kept; and yet no small surplus of hay remains to be sent to the Liverpool market.

It was in the memory of a worthy and experienced farmer*, who only died the present year, that the first load of dung brought from Liverpool towards the North, was by his father; and who was paid for carting the same, the price that heretofore had been paid for carting away this nuisance, and throwing it into the river Mersey.

The good effects upon the land, which experience has proved dung to have, have caused it, at this period, to be sold at an advanced price, and carted to a considerable distance. The varieties of potatoes, their diminished value to the purchaser, in comparison to the price they fetched twenty or thirty years ago, under an advance of land, dung, and labour, proves superior cultivation, and much greater produce of this excellent vegetable, from the same quantity of soil. The introduction of clover, the varieties of seeds of grain, both oats and wheat, prove some degree of attention; and the introduction of the turnip, although the cultivation at present be not so extended, nor yet treated in the most husbandman-like manner. Yet this,

* Mr. John Harper, late of Bank-hall.

and all the above examples, are introduced to prove that a Lancashire farmer, though not a complete agriculturist, is not without some spirit of improvement.

Another good practice, that may tend to both the good of the landlord and his tenant, should, on this occasion, be mentioned.

Upon the estate of Mr. Bayley, of Hope, before mentioned, whenever a tenant wishes for the whole of his farm, or any particular field, to be improved, by draining, marling, liming, dunging, or laying down to grass in a superior manner, the landlord takes the field into his own possession, during the process; and, when completed, returns it again to the tenant, with an advanced rent of ten *per cent.* upon the capital laid out upon the improvements; by which steps Mr. Bayley has advanced the rental of his estate, since the year 1768, more than ten fold—his tenants are thriving, and getting money. Mr. James Balmer, who accompanied the surveyor in this excursion, and is a good judge of cattle, declared he never saw, upon any one estate, so large a stock of cattle, uniformly good, being the Lancashire long horn, and what he termed the right sort.

S. H. Fazakerly, Esq. of Fazakerly, has improved several estates in the same manner, and then let them out to tenants, charging double interest upon the capital advanced.

Mr. Eccleston conceives, “that a spirit for improvement might be excited amongst the farmers, by occasional tours, every three or five years, undertaken by a person appointed by the Board, whose report should be printed, the names of the improvers, and improvements, to be inserted, with proper eulogiums for their industry and ingenuity, in order to excite, by emulation, others to similar exertions.”

IMPROVEMENTS OF LIVE STOCK, &c.

ON the improvement of stock, Mr. Eccleston suggests the following hints. He imagines, that the number of horses bred in this, surpasses that of any other county in the kingdom. He proposes, "that a yearly tax be laid upon stallions of five times the sum they receive for serving each mare, for the season; it would prevent the inferior sort of stallions, which only serve to procreate those of small value which are nearly useless, with which almost every part of the kingdom abounds. A very considerable sum would annually accrue to government, were each stallion to pay five times the sum for a licence. that he serves each mare at, viz. a horse that covers at one guinea for the season, should pay to government five guineas for a licence; and others, that cover at £20, should pay one hundred.

Would the produce of such a tax be less than £50,000 *per ann.* throughout Great Britain? By the above tax, the farmer's stock, in the horse line, would in a few years become of infinitely more value. Fewer, being stronger, would be equal to his work, our cavalry better mounted, and a greater return would annually be made by foreign nations to this country, for the superior and fine horses we should then be able to export."

Some more attention is requisite in the choice of good bulls, than has hitherto been paid, by the breeder, towards the improvement of his stock. Mr. Bakewell has fully convinced the world, what may be effected by persevering attention on this subject.

Many of the lands, in this county, are suitable, and would pay well to breeding. An improved stock, as before hinted, would return the greatest profit.

A great

A great improvement has been suggested by Mr. Wilkinson, of Castle-Head, of embanking upon the sands, and gaining thereby 30,000 acres. This great attempt has been already noticed in the Annals of agriculture; but these patriotic and public attentions are at present defeated, by a difference of opinion amongst individuals, claims of the Lords of the manors, &c.

Mr. Wilkinson also, by turning the course of some brooks, has recovered lands from the sea; by which the flux of the tide, in the space of about 8 years, has raised the lands near 6 feet; so that, after the water is kept in narrower bounds, by the opening of a new channel, the tide alone does the work.

Another improvement here suggests itself, by a revival of the covenants in leases; and adapting them better to the present improved system of agriculture; many of them at present militate against some improved practices, nor has an ingenious cultivator scope to act, being restrained under covenant. There wants a spirit of liberality in the general tenor of leases, being fully convinced that examples might be produced, where, if exertions were judiciously made under this head, the tenant would be benefited, and the landlord enriched; and this only by a new modulation of the covenants, whereby the lands, if managed under a certain cultivation, must return, at the expiration of the lease, into the hands of the possessor, in a better state than they were in at the beginning; and of course, would bring an advanced rental to the estate: and again, the tenant, if industrious, might be enabled, by his advanced capital already gained by his former lease, and the superior state into which he now finds the lands upon the same farm, to give the advanced rent to his landlord with greater profit to himself, than upon his former rent, under the impoverished state, in which farms are generally entered upon.

Leases upon lives only act as checks to improvements; they are, in general, only beneficial to the first purchaser, who secures an income on three lives, for fourteen years purchase—the fee simple of which would have required double the sum. The successors, elevated by possessing an estate under a small annual quit rent, instead of full rent, *live up to the bright*, as the phrase is, and are but ill-prepared to renew the lease, or pay the fine required when a life drops. The lease, through inability of the tenant to renew, or some other cause, is suffered to run out, under the uncertainty of life, and the lands (there being no provision made by covenants to prevent it) are harrassed, and abused, to a degree as to require a length of time to restore them.

OBSTACLES.

THE obstacles to improvements are so many, that it is doubtful whether the whole will be here enumerated.

The grand obstacle is the want of a general inclosure act.

The great expence in obtaining particular acts, for certain districts, the odium, obloquy, and ill-natured reflections, cast upon individuals who take an active part in promoting these good works, with the vexatious delays of frivolous obstructions, and many other causes, are obstacles of such magnitude, as to prevent even an attempt at an inclosure-bill, by the means of which many thousand acres of land, which lie waste, and unprofitable, either to individuals or the public, might bear the richest grains, or fatten the choicest bullocks.

M

The

The corn laws have hitherto operated most essentially against improvements. If these matters were left to the simple operation of merchandise, and to find their own level by abundance, or deficiency, the farmer and the public would generally be benefited. Apprehensions of famine, under the present enterprising system of merchants, is entirely vanished. There will always be people bold enough to speculate in such an article of universal consumption, as to prevent a scarcity. The laws have hitherto afforded no assistance to the farmer. If there be a general failure of crops, the loss falls totally upon himself; he cannot avail himself of advancing the price, as recompence for the failure of quantity*. The ports are opened for farmers or merchants, to send in their produce from foreign nations; lands which pay no taxes to support our government, and some of which are exempt from tythe-laws.

Tythes are universally acknowledged to operate as obstacles to improvements; and they fall more heavily upon the spirited agriculturist, than upon the indolent farmer.

The prohibition from exporting wool, in its raw state, is another obstacle against encouraging the increase of stock, or paying that attention to the quality of sheep, so as to produce the finest wool; and sheep are reckoned the best stock for enriching either the arable or pasture farm. If liberty were given to export the raw material, under certain duties, and restrictions, the farmer would be benefited, the manufacturer not injured, and the revenue increased.

* The question under consideration at present, is not what may most be conducive to the general good of the community, but what may be most advantageous to the farmer and fair trader. It is, in general, some adventurous speculator who reaps the most advantage, by artfully evading, or turning the law to his own favour.

The high duties upon salt, operate as great obstacles to the application of this article, to the advantage of their cattle, in giving it to them in troughs, &c. in certain cases. It is an article most cattle are fond of; it assists digestion; promotes a disposition to fatten; prevents certain disorders; and, in foreign parts, they use it in large quantities, not being loaded by high duties. And, it is asserted, entirely prevents that fatal disease amongst sheep, the rot *.

Glebe, or church lands, or any other appropriated to the support of meeting-houses, and those lands which appertain to small livings, purchased by the bounty of Queen Anne, are generally under a bad state of cultivation; the uncertainty of lease, depending upon contingency of a single life, operating as strong obstacles, to any degree of even moderate improvements; and in consequence they are, in general, under the very worst state of management.

Short leases, most certainly, are grand obstacles. The farmers would merit harsher epithets, than they are at present charged with, were they to venture upon spirited improvements, upon a short term.

* It is to be lamented, that some better method has not been hitherto devised, to secure the duties upon this article of salt, different to the expensive mode of collecting it, by numerous officers; and, at the same time, to take off the check given to the fisheries, and agriculture, by the high duties.

The money raised by the public, on the article of salt, in Great Britain, is £400,000, of which only one third is received at the Exchequer.

The gross revenue, in 1776, was	-	-	£895,439
Drawbacks, bounties, and discounts	-	£622,865	
Charge of management	-	26,410	
		<hr/>	649,275
Nett produce		<hr/>	£ 246,274

Vide Knox's Tour, p. cxlviii.

Another obstacle to improvements, is frequently occasioned, by the obduracy or disposition of an adjoining neighbour; *e. g.* one is disposed to drain his lands, but cannot effect this without the concurrence of a second, or probably a third and fourth, to assist in scouring ditches, opening water-courses, and obstructions to the drains intended, and the difficulty of enforcing this concurrence, is a great obstacle to many improvements. Where water proves injurious to roads, an opening may be effected, by application to justices of the peace, and by indictment.—Why not admit of a similar operation, so simple and easy to effect, in the practice of agriculture?

MISCELLANEOUS OBSERVATIONS.

Weights and Measures.

THE difference of weights and measures, in this county, are so many, that if they cannot, with propriety, be called obstacles, they may with truth be termed incumbrances, to the general intercourse of business, and clear comprehension of what is meant under similar terms, but with different ideas annexed to them, according to the object.

The rod in Lancashire is of no less than six different lengths in different parts of the county; namely, the statute or $5\frac{1}{2}$ yards, 6, $6\frac{1}{2}$, 7, $7\frac{1}{2}$, and eight yards, to the rod, pole, or perch*.

* To hazard a conjecture upon the etymology of the word, and the various lengths of the measure, the rod or pole got out of an adjoining forest, was most probably the primitive measure, but without any certain standard. A straight rod, or pole, of $5\frac{1}{2}$ yards long, presented itself; and this served to measure a certain district. Another rod, or pole, of a different length, presented itself to a different measurer, and that became his standard for another district. These rods, or poles, being set apart for that purpose, and used again when occasion called; and in time became the established standard of the district. Hence, *fall*, from the fall of the pole, which covered a certain length.

The measures are equally variable. At Lancaster, a load of wheat, beans, and pease, is four and a half bushels (Winchester); barley, six Winchester bushels; oats, seven and a half Winchester bushels*.

N. B. Wheat has been sold lately by the weight of 280 lb.

Ulverstone, a load of hay is $4\frac{1}{2}$ Winchester bushels; oats six Winchester bushels.

Manchester, a load of wheat is sixteen score; a load of oats, nine Winchester bushels; a load of beans, five Winchester bushels; a load of potatoes twelve score, and twelve pounds, washed; unwashed, thirteen score.

Liverpool, the town's bushel is $34\frac{1}{2}$ quarts for oats, barley, and beans; and, by the custom of trade, one given in at every score, or twenty-one bushels; of late, wheat, barley and oats, have been sold by weight, but never yet beans. Wheat 70lb. to the bushel, barley 60lb. and oats 45lb.; and, probably, this mode, by weight, is the fairest for both buyer and seller; for, besides the difficulty of getting a true standard bushel or measure, the dexterity of corn-meters is such, that it is asserted † they can gain either to the buyer or seller, from £10 to £20 *per cent.* in different modes of measurement. That £5 *per cent.* is the common practice of even bunglers in the business; this is an enormous profit, and the unfairness of such practices merits the severest reprehension.

Lancaster, they have a measure called a windle, which is three Winchester bushels.

Preston, the windle of wheat, beans, and barley, is three and a half Winchester bushels; but, of late, 220lb. has

* A load, so denominated, it should seem, from the horse load, in a sack, the weight a horse could conveniently carry on his back. Every kind of grain, &c. was conveyed this way till very lately. The load is the lightest in the mountainous parts.

† By a considerable corn-merchant.

been.

been reckoned a windle of wheat; they have also a measure at Preston, called a peck, which is twenty-eight quarts, four of which are called a windle.

Weights. There are three different weights expressed under the general term, *hundred weight*; namely, 100lb. 112lb. and 120lb. The stone varies. In Liverpool 20lb. is the weight allowed for the several articles under that denomination, as beef, hay, straw, &c. and probably all the articles produced from land.

Butter is required to weigh 18 ounces, avoirdupois, or is liable to a seizure.

Vermin. This is an object that requires more general attention than has hitherto been paid to it.

Individuals may have exerted themselves, and run to great expence; but these exertions are of small avail, whilst the surrounding neighbours are harbouring nurseries, to make future depredations upon those premises, which they may find contemned. Several townships have, of late associated together, and engaged a mole-catcher, at the rate of four-pence *per* acre, for a term of seven years; in which period of time the mole-catcher imagines he can nearly have destroyed the race of those animals in the district. This agreement, towards a total extirpation, must be more efficacious than the greatest exertions of individuals. It is a doubt, after all, whether moles may not be useful animals in the destruction of certain noxious earth-worms.

Rats are a very destructive animal, not only amongst grain, but in other articles; and they are frequently brought in abundance into the sea-ports in corn, and other vessels. The same mode has been very lately adopted, by particular

particular townships, towards a general destruction of these very troublesome and voracious animals *.

Sparrow, and small birds, destroy great quantities of corn; and sums of money have been annually paid, in this

* See,

Through the vehicle of Mr. Young's useful *Annals*, I am informed of the establishment of a most excellent and honourable Board of Agriculture, under whom, I find, you are appointed to the survey of this county. To you, therefore, I beg leave to address this, though it is not a direct answer to any of the queries proposed by the Board; yet, I trust, it may be considered, as having some relation to the former part of the last. This country is, to a very great degree, infested with that most destructive vermin, rats: I shall not, now, attempt any statement of the probable damages they may be supposed to do us; but the annual losses we sustain by them in our buildings, corn, and other goods, is very considerable. I, and most of the principal farmers, and others, for a circuit of about 20 or 30 miles, have, for some time, employed Edmund Heathcote, of Ormskirk, who has a very expeditious, effectual, and safe, mode of destroying them; but this affords us only a temporary relief, for we are, (perhaps, from our neighbours, who had not theirs destroyed,) before long, again infested.

In some townships they have employed him to clear the whole for a stipulated sum, paid annually, out of some pound-rate-levy, which is so trifling, as not to be felt by any individual: and has, I hear, nearly the wished for effect (a). But even this is certainly a plan too-circumscribed to answer any great end. My reasons, therefore, for troubling you with this, is, in hopes, through you, to obtain, from the wisdom of the Honourable Board, some suggestions for the most eligible plan of extending the employment of this person; or, otherwise, for the extirpation of this most destructive pest.

I am,

SIR,

WIGAN, in the County of
LANCASTER, Dec. 15,
1793.

Your very humble Servant,

OŠKILL SUMNER.

The surveyor has employed Mr. Edmund Heathcote, the person mentioned in the letter, who always effected a present cure; but, after some space of time, the vermin returned from other quarters. The man he believes to be very sober and attentive to his business; possessed of much civility, and has already obtained a certificate of his success, in places where he has been employed—a considerable number of the gentlemen in the neighbourhood. J. H.

(a) About one half-penny in the assessed rates.

neigh-

neighbourhood, towards their destruction, for many years past; and although the amount of the sum, from the number of years the custom has obtained, is become pretty large, no decisive effects have been produced; the premiums paid may have been too trifling to effect a total cure, and the measures, hitherto taken, too languid; and if, in this work, there was an association, to declare war against the common enemy, and vigorous exertions enforced, by sufficient premiums—for the destruction occasioned by these small creatures is of greater extent than many people could imagine. The amount of a hundred loads, sacks of wheat, have been calculated to have been destroyed by these diminutive devourers, in the course of one season, in a township of no very large extent, besides the oats and barley. Magpies, carrion-crows, kites, hawks, and jays, should be included amongst the common enemy.

Differences between Landlords and Tenants.

The justices might settle all differences, and disputes, betwixt the landlords and tenants, instead of the present expensive mode of courts of judicature. The differences are generally of a trifling nature, and easy of comprehension. The tenant would more likely obtain redress for his complaints, under this mode of judicial enquiry, and the landlord prevent abuses to his land, from which he may be withheld, under certain circumstances, of correcting a refractory tenant.

MISCELLANEOUS OBSERVATIONS.

CANALS. In granting new bills for cutting navigable canals, care should be taken by the legislature, that lime or manure be carried upon low terms. The introduction of wealth, in consequence of superior cultivation, by the means of manures, &c. will introduce the carriage of more bulky articles, and soon repay the proprietors the trifling indulgence. An ingenious gentleman observed, that, as a certain portion of land was lost to the community, either for tillage or pasture, by cutting canals, care ought to be taken in the banks to preserve as much grass as possible, by burying the rubbish under ground, and applying the best soil to cover the surface of the banks; trifling as such an object may be, as canals are daily increasing, the amount, in the issue, would be something, and would repay to the public a sufficiency for the general attention requisite.

The many canals already begun, and intended, have had considerable effects both upon the agriculture, manufactures, and general state of the county*.

The Sankey canal was the first inland navigation in the kingdom, and was opened in the year 1756; after which the Duke of Bridgewater's canal; and then the Leeds canal, as far as Wigan, were completed. The canal from Kendal, through Lancaster, to Westhoughton, is a great undertaking, ten miles of which are already completed. The Bolton canal, already begun, the Rochdale canal intended, with the navigable rivers Mersey, Douglas, Ribble, Wyre, and Loyne, render the carriage of heavy articles, through the internal parts of the county, more easy and less expen-

* Particulars of what business is done in each, and their connections with the trade of Liverpool, will be given in the intended history of that town:

five, than where such channels of conveyance are not found. They have no small effects upon the agriculture of the county, in conveying dung, lime, and other articles, into parts, whither, without their assistance, they could hardly have been transmitted; as also upon the manufactures, by the conveyance of coal and raw materials, the gross weight of which would have been too expensive upon carriage by land.

Dogs are in general a nuisance. The butcher frequently sustains heavy losses, in the destruction or dispersion of his sheep, in the vicinity of great towns, by marauding dogs; and those who breed sheep, frequently complain, of their flocks being greatly annoyed by the yelping of curs, and who will sometimes wantonly encroach upon their borders. The passenger is but too often attacked by their troublesome and vociferous salutations. They are certainly a fit object of taxation, if those of real use could be excepted.

Weeds, especially those which bear winged seeds, as the thistle, dandelion, &c. should be declared common enemies, and treated accordingly. It is to no purpose that a neat farmer, cleanses his ground from such noxious enemies, if a less attentive neighbour, permit them to flourish in the adjoining premises; the winds will disperse the floating emigrants over the well, as the ill cultivated field, where they will take possession, without the permission of the owner.

Manure. Much has been frequently said on the best season of laying dung upon the lands—the surveyor has been favoured with the following observations, on this subject, by an experienced farmer *.

* Mr. H. Harper, Bank-hall,

“ If cow-dung, the fresher the better, provided it be the proper season for putting it upon the land ; which is, if meadow, from the time of getting the hay off the land, till the middle of October. For, if the grass has done springing, the dung lies exposed all the winter to rain, snow, frosts, and the vicissitudes of seasons, which exhaust the strength, so as to destroy much of its good qualities : if it cannot be accomplished in autumn, then the ensuing spring ; and, if the season should not suit, the strength of the manure will be reaped the ensuing crop.” He recommends turning over the dung previous to its being put upon the land, and to lie till it begins to ferment ; then to carry it upon the land, and even spread it before the heat be gone off, and by which the dung *takes* to the land the better. He prefers mixing cow-dung, horse-dung, butchers-dung, and night-soil, together, in preference to each separate ; and this mixture is in its best state from six to eight months old.

Fences. When hedges grow thin at the bottom, Mr. Harper has the following practice. He cuts the wood very low, leaving the young and vigorous shoots ; after cutting away the old wood, he takes a hand-saw, and cuts away again that part of the old stump, so far as was shaken by the hatchet in the first separation, and saws the top level, so that the water may not remain. By this practice, he says, the shoots will grow stronger, and more in number, in one year, than they would by the common practice in three years. When the shoots are half a yard, or two feet long, he bends the young shoots down, and, where room permits, makes a hole in the bank with a shovel, in which the shoots are closely tied down with hooked sticks, and covered up again with earth, when these young branches, with a little nursing, will, by taking root afresh, form a new hedge.

**METHOD OF FEEDING COWS, BY MR. HENRY
HARPER.**

There are seasons in which it is so very difficult to make good hay, that much will be damaged although the greatest attention be paid. The consequence of which is, the milk given by the same cows, is less in quantity, and of inferior quality; the butter both loses its natural colour and good flavour; to remedy which, this excellent farmer takes the following method.

He provides some sort of provender for his cows; that is, some species of ground grain; and to mix with it, he procures some hay of the best quality, and from the most fertile lands, which he treats in the following manner. This rich hay is to be used as an ingredient for tea, by pouring boiling water upon it; and the infusion he makes use of to scald his ground grain, chopping the hay, before being infused, with an engine, for the purpose of cutting straw; and this hay, so cut to the size of one inch long, is to be mixed with scalded provender, to the amount of two or three quarts to every beast. This mixture of bruised grain, scalded with the infusion of rich hay, and the addition of the hay to the amount of two or three quarts to each beast, improves the flavour of the butter, and restores it to its proper yellow colour.

F A I R S.

In the year 1780, August 2, a fortnight fair was established at Harrington, near Liverpool, opposite St. James's church, by the North-country graziers, to shew fat cattle and sheep, which was encouraged by the butchers in Liverpool, and neighbourhood. Accommodations for the cattle and sheep were effected by Mr. Samuel Sandys, who then held upwards of forty Cheshire acres of land, which was appropriated for the purpose, and was continued every fortnight

1

until

until the 12th of February, 1783; when it was removed to Kirkdale*, for convenience to the butchers in Liverpool; during which period there were exposed for sale 39,160 sheep, and 8,309 head cattle, and upwards: in the year 1781, at one show, in September, were 1,489 sheep, and 279 head cattle; and, in October, 1782, at another fair were 1,691 sheep, and 343 head cattle; which was thought very considerable. After the dissolution of this market, Mr. Sandys had applications, from cow-keepers, for the land, which was much improved by the pasturage of drovers, sheep, and cattle; also by the quantity of manure which was collected from his stall, feeding thirty head in shades, built on the premises, which was declined on removal of the fair; therefore Mr. Sandys proposed finding milk cows, and keeping them at grass or hay for 5*d.* *per* head *per* week, at his own risk, or keep *their* cows at 4*d.* *per* week, at their risk; and when any cow declined so much as not to pay the farmer thereof, he had a fresh cow found, or an abatement in proportion to her decrease: this mode kept the land in high condition from the quantity of dung collected on the estate, &c.

Bees. These laborious and useful insects, have not been hitherto treated with that degree of attention they merit. The produce of their labour is not only pleasant, but medicinal; and before the introduction of sugar, by the discovery of America, honey must have been in high esteem, by enriching the flavour of many articles, which have only yielded to the introduction and superabundance of sugar †.

The

* The fair has remained at Kirkdale ever since. This fair began originally at Walton, about twenty years ago, thence removed to Kirkdale, then to Harrington, and, lastly, came back to Kirkdale; and has proved a great convenience to the Liverpool butchers.

† It is in the memory of a person (a), now living, that a family, on the borders of the south east part of the county made a complaint, that their bees had

(a) Mr. Titus Hibbert, Manchester.

The work can be an artistic exercise, and valuable to many in the area in which it makes a contribution to the work of the police. It is a useful intermediate training, and must not be confused with the development of what is a frequently applied, state of work of the

This plan of transport is little mentioned in their valuations, as one will be content with a horse-drawn cart, with very small accommodation on it, to what is commonly termed an "ox" for which small carts are constructed, in a short space of time, generally ready to go and return on the express service. The patients from whom they gather their own food, and so far as may be judged, not the land injured; or, in other words, they collect and deposit in their carts, and their carriers are afterwards either sent or hired (whether by agreement or their own will not, in this instance, be determined); a factorage, which, if met by their numerous carriers collected together, would be a bad case in its own right.

These contributions have indicated that it is desirable to practice this law, at the expense of their lives, by cultural and other divisions in the application of different books. These schemes, seemingly humane, have proved a lie, certainly such as a long-term, instead of a quick cure, must be sought for. The same is true of the use of the white is colored, and is part of that is produced in the same way, and a short sentence, leaves the first sentence.

the results of the investigation are as follows:

The interview with the informant was conducted in the context of the study of women's political participation in the community. The informant was asked to provide information on the political participation of women in the community. The informant was asked to provide information on the political participation of women in the community. The informant was asked to provide information on the political participation of women in the community.

[illegible]

to famine. Therefore, if plunder be legal, immediate destruction, by fire or sulphur, is the greatest humanity *.

Liquorice is not cultivated in this county, in any sufficient quantity, as an object of profit; although upon many grounds, it might flourish, and be worthy of attention.

The surveyor has a number of plants interspersed amongst other shrubs; when the root is wanted for decoctions, or other use in the family, a quantity is taken up, and it has been found to be as well-flavoured, rich, and juicy, as any ever tasted.

Rhubarb, also, has been planted in this way, a number of years, and the root cured and made use of; some pounds were lately presented to the Liverpool Dispensary. This plant, when in bloom, has a majestic appearance; its growth, at a certain period, a little before the seed appears, is amazing. The stem has grown, in length, three inches in twenty-four hours.

The surveyor, has, at present, a most vigorous plantation. Having destroyed an old hedge planted upon a bank with a ditch on one side; a new thorn hedge was again planted where the old bank had formerly stood, and the ditch filled up with rich earth, in which the plantation of rhubarb was made; secured on one side by the hedge, on the other by rails.

* Mr. Lowas, a clergyman in this county, is at present employed in devising some means to save the lives of these hitherto devoted, and industrious insects; together with some useful experiments and improvements, which, when sufficiently ascertained, will be presented to the public.

GENERAL IMPROVEMENT.

AFTER what has already been noticed, nothing need be added but a short recapitulation.

The ground work of improvement must be a general inclosure bill; then a removal of the obstacles which impede improvement; and, lastly, a revival of the covenants, granted in leases, constructed according to the improved system of agriculture; and the establishment of a more liberal plan between landlord and tenant, to the mutual advantage of both *.

A farther progress in draining of such lands as have not enjoyed that superior advantage; some improvement in the rotation of crops; a greater attention to the growth of turnips, under the improved system of hand-hoeing; inasmuch that the loss of one year's crop, by the present mode of summer fallows might be avoided; and, above all, the greatest gain, with the least expence, might be obtained by watering the land, for which many opportunities offer, but few have been adopted. If the advantages which here present themselves, are properly attended to, the state of agriculture in this county, may be raised to a height of perfection, hardly

* There are many will immediately exclaim, What, grant longer leases? when, if land advances, the tenant alone enjoys the advantage; but if it fall, he throws up his farm to his landlord, being unable to pay his rent; and if unable to pay, what else can a tenant do? No tenant can support repeated losses—and the decreased value should revert upon the person upon whom it ought certainly to fall; and, if the land advances in value, the tenant only enjoys that temporary advance of market-price, by which the fee simple of the lands, was, it is probable, originally gained; and, in the issue, the landlord must reap the increasing advantage. But, even in this case, provided this may by some be thought too great a chance to the tenants to reap advantage from, covenants might be devised, to accommodate regulations to the satisfaction of both parties.

to be conceived; and which, therefore, however certain, cannot be stated, without the appearance of rashness.

The surveyor of Lancashire, embraces this opportunity, of returning his grateful thanks, for the polite and cordial reception he met with, in his different excursions through the county; for the liberal communications he received upon the spot; and the many valuable answers he was afterwards favoured with by letter. To these spirited gentlemen, farmers, and others, who have contributed their assistance, to the formation of this report, he most gratefully subscribes himself,

their obliged

Walton near Liverpool,
Dec. 10, 1793.

and obedient humble servant,

JOHN HOLT:

O B S E R V A T I O N S

O N T H E

C O N S T R U C T I O N O F T H E L A C T O M E T E R

F O R

D E T E R M I N I N G T H E G O O D N E S S O F M I L K ,

A N D T H E A D V A N T A G E S T O B E D E R I V E D T H E R E F R O M .

THE lactometer is constructed with 10 divisions upon the stem (similar to the patent brewing-hydrometer, and with eight weights, which are to be applied only one at a time upon the top, to obtain the weight of the milk; an ivory sliding-rule accompanies this instrument, upon the middle or sliding part of which is laid down the lactometer weight of the milk, going from 0 to 30; and opposite thereto are placed the various strengths of milk, from water to 160—100 having previously been fixed upon, from a number of experiments, as the standard of good new-milk, and each of the other numbers bearing a proportionate reference thereto.

At one end of the sliding-rule the degrees of heat, from 40 to 100, are placed with a star opposite, as an index to fix the slide to the temperature of the milk.

The whole being graduated to shew the exact strength of the milk, as it would appear in temperature of 55 degrees of heat, although tried in any inferior or superior temperature

temperature, between 40° and 100° ; thus the great inconvenience which would attend bringing the milk at all times to one temperature is avoided, and a simple mechanical method of allowing for the contraction and expansion substituted.

And as skimmed milk, being divested of the butterious quality which existed before skimming, appears to have a less degree of affinity with that than the new-milk has, one side of the ivory sliding-rule is adapted to skimmed, and the other to new milk.

GENERAL RULE.

First, find the temperature of the milk with the thermometer, and fix the sliding-rule so that the star shall be facing the degree of heat the mercury rises or falls to; then put in the lactometer and try which of the weights, applied to the top, will sink it to some one division upon the stem; add the number of the weight upon the top, and that of the division together, and opposite the same formed upon the side, will be shewn the strength of the milk.

EXAMPLES.

OF NEW-MILK.—If in the temperature of 72° , the lactometer with the weight 40 sinks to 9 upon the stem, fix the slides so that the star shall be facing 72° ; then opposite 49 will be found 100, the strength of the milk — Again, if in 60° the lactometer with 50 on the top, sinks to 6 upon the stem, the slide being fixed for new-milk so, that the star shall be at 60° of heat, then facing 56 will be found 110, the strength of this milk in proportion towards the other, provided it is equally replete with cream.

To discover which it becomes requisite that two samples should find a certain time that the cream may rise, which being taken off, they are to be tried with the lactometer again; and, as the cream is evidently the lighter part, the milk will appear by the lactometer, denser or better in quality than before. Suppose the milk, in the first example, to be 57 by the lactometer in 60 degrees of heat, then the strength by the skimmed-milk side of the rule will be 112. And admit the second example of new-milk to be 53 in 64° when skimmed, the strength would be 115.

As a comparison—

Say No. 1. New-milk	-	-	100
Ditto Skimmed	-	-	112
		Difference	12
No. 2. New-milk	-	-	110
When Skimmed	-	-	116
		Difference	6

From which it appears, that No. 1. has produced a larger quantity of cream than No. 2, and consequently may be deemed the better milk.

Some instances have occurred where the strength of new-milk has only been about 80; and when skimmed near 100.

Thus it may, without the least impropriety, be called a milk much better adapted for making butter than cheese. And the experiment No. 2, a milk more advantageous for

cheese than butter, its being considerably denser, from and consequently containing a much larger portion of the curd, or more solid parts, which constitute the basis of cheese. The serum or whey in general being near the same density.

INSTANCES WHEREIN THE LACTOMETER MAY BE USEFUL.

In discovering what breed of cattle are most advantageous.

What food in the winter season, whether carrots, turnips, potatoes, &c. are best.

What the effects of different pastures may be.

How far particular farms are best adapted for making butter or cheese.

How far the inconvenience of large cheeses in some dairies being too rich to stand, may be prevented, by discovering when this redundancy of richness exists in the milk.

And in fixing a standard for the sale of this useful article of life.

A standard for skimmed-milk may readily be fixed by saying what strength the common saleable skimmed-milk shall be by the lactometer, or what its specific gravity shall be in relation to that of water, in the temperate degree of heat; and that an easy comparison may be made between
the

the specific gravity of any milk, and its lactometer strength: this instrument is so constructed that one of specific gravity shall exactly correspond with three of strength—that is, the strength of 90 by the lactometer is a milk whose specific gravity is 1030, to common pump-water 1000.

From a number of experiments and observations, the common saleable skimmed-milk in Liverpool is from 52 to 64 of strength, and that of new-milk from 70 to 80; but it would be difficult to fix any standard for the latter, unless some mode could be devised to discover whether it was mixed with old milk or not. The only method would be, after fixing the strength of it, to try by letting it stand, to see if it produced that quantity of cream, which, as new-milk, it might reasonably be expected to do.

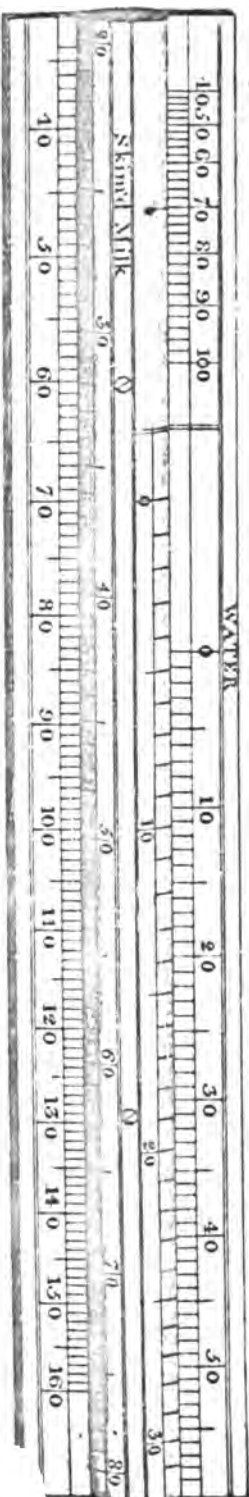
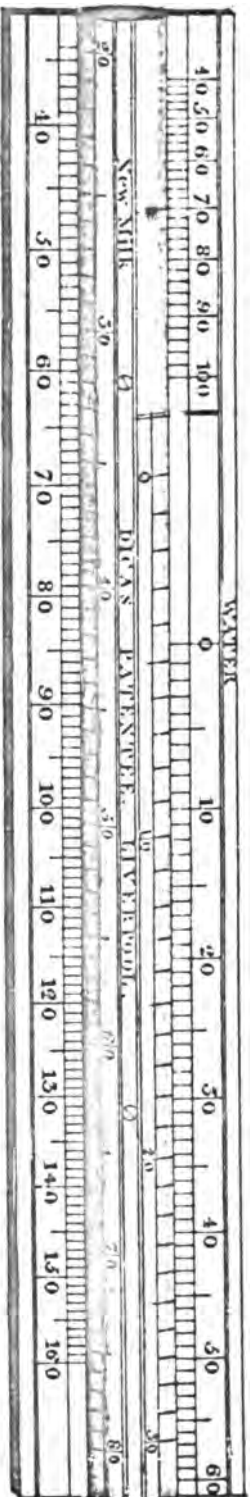
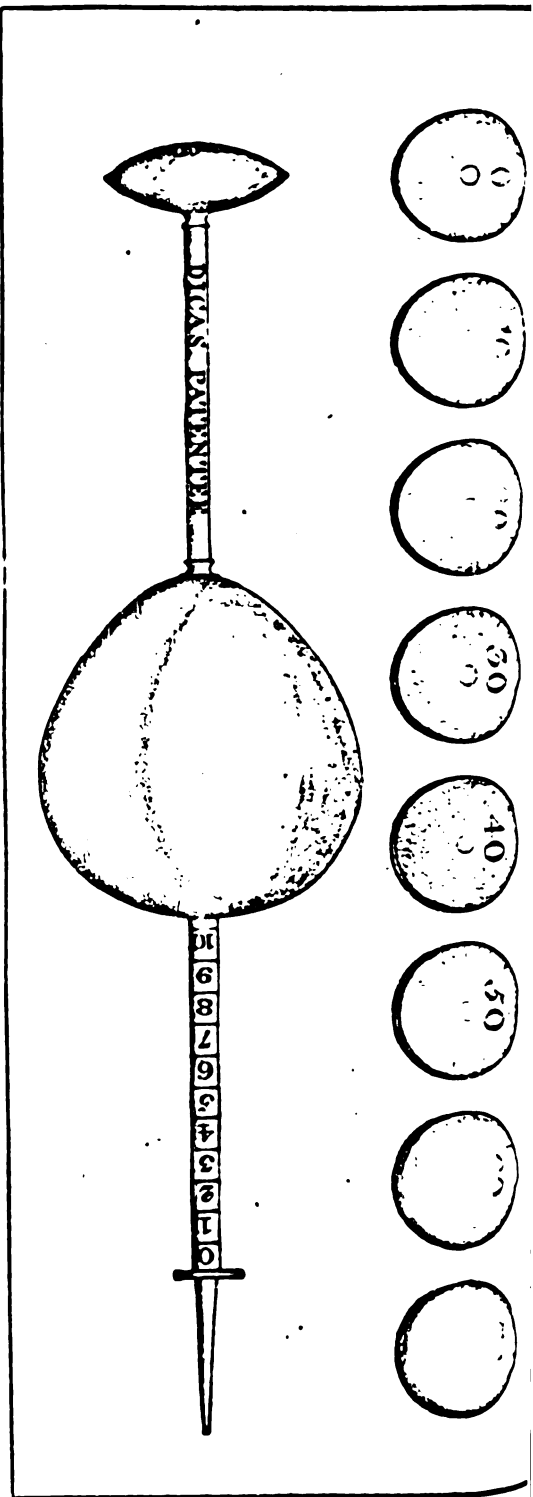
APPENDIX.

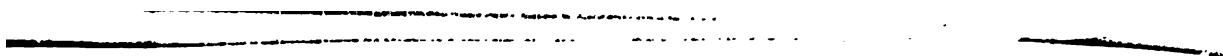
No. 1. Experiments made on different milks, by Dica's Lactometer.

1. **AT** Sir Harry Hoghton's, Walton-Hall, from a general milking. quality 100.
2. At Blackburne, from a cow eighteen months calved, first drawn milk 90, last drawn 54.
3. At Kirkland, A. Butler, Esq. cow six months calved, first drawn 96, last drawn 76.
4. At Lancaster, cow nine months calved, first drawn 66, last drawn 57.
5. At Poulton, cow five months calved, first drawn 104, last drawn 88.
6. At Wroughton, quality of the milk 64; after standing twelve hours, and afterwards skimmed 97.
7. At Rainford, quality 86; after being skimmed 105.
8. At Ravenhead, quality 101; tried some skimmed milk from the same cows 107.
9. At Orford, quality 87, tried some skimmed milk from the same cows 105.
10. At the same place tried the milk of an Alderney cow 112.
11. At Tildesley, a farm formerly remarkable for making good cheese, first drawn milk from the same cow 92, second drawn milk 89, last drawn milk 87.
12. At Chow Bent, quality 102, after being skimmed 115.
13. At Scarisbrick, Mr. Eccleston's Suffolk poles.
14. Young Margery 96, after being skimmed 107.
15. Young Cherry 103, after being skimmed 119.
16. Branded Suffolk 99, after being skimmed 112.
17. Young Primrose 104, after being skimmed 114.
18. Young Peg, quality 99, after being skimmed 112.

29. Suffolk

19. Suffolk Dunn, very old, bought from Mrs. Chevalier, reckoned in Suffolk a good milker; has been in Mr. Eccleston's possession about eight years; first drawn milk 83, after being skimmed 102, second drawn milk 85, after being skimmed 93.
20. At Mr. Eccleston's, general milk from twenty cows 92, after being skimmed 108. N.B. This milk quality 108; after being broke by runnet, and the curd subtracted, was 69.
21. The cream from all the foregoing experiments 63.
22. Walton-Hall, quality 96; after being skimmed 104.
23. Rev. Mr. Heathcote's Alderney cow 100, after being skimmed 115.
24. White cow Mr. Heathcote's 103, after being skimmed 110.
25. John Baker's milk 96, after being skimmed 108.
26. Edward Ashcroft's milk 79, after being skimmed 98.
27. Mary Voco's milk 99, after being skimmed 113.
28. Henry Fennington's milk 90, after being skimmed 108.
29. Anthony Holmes's milk 99, after being skimmed 108.
30. Thomas Cropper's milk 111, after being skimmed 122.
31. James Holmes's milk 97, after being skimmed 107.
32. The surveyor's red cow, second milk after calving 120.
33. Fourth milk after calving 109.
34. Sixth milk after calving 95, after being skimmed 117.
35. Eighth milk after calving 101, skimmed 120.
36. Tenth milk after calving 101, after being skimmed 120.
37. The surveyor's red cow, twenty-second milk after calving 102.
38. After being skimmed 111, second drawn milk the same meal 90, after being skimmed 113.
39. Last drawn milk the same meal 72, after being skimmed 102. This milk, churned by itself, produced eight pounds of butter *per week* of eighteen ounces to the pound.
40. The surveyor's cow Coquette, third milk after calving 117.
41. Fourth milk after calving 105, after being skimmed 119.
42. Fifth milk after calving 102, after being skimmed 125.
43. Twentieth milk after calving 105, after being skimmed 118.
N. B. Coquette gives six pounds and one quarter of butter *per week*, of 18 oz. to the pound.
44. The surveyor's cow, Young Useful, twentieth milk after calving, first drawn.
45. Milk 102, after being skimmed 118.
46. Second drawn 91, after being skimmed 108.
47. All the milk milked together 85, after being skimmed 110. N. B. Butter *per week*, five pound fifteen ounces, of eighteen ounces to the pound.
48. December 10th, red cow, morning 98, after being skimmed 113.
49. The same cow the same evening 91, after being skimmed 104.
50. Coquette in the morning 101, after being skimmed 107.
51. The same cow the same evening 93, after being skimmed 106.





1. The first group of respondents (Group 1) consisted of 100 individuals who were randomly selected from the population of 1,000. This group was used to estimate the overall mean and standard deviation of the population.

i

52. Young Useful, in the morning 100, after being skimmed 109.
 53. The same cow the same evening 84, after being skimmed 100*.
 N. B. These three cows calved in November last, within the space of a fortnight.
 54. Bull-neck of the same place; calved about eight months; morning quality 100, after being skimmed 106.
 55. In the evening of the same day 91, after being skimmed 106.
 N. B. Red cow gives fourteen quarts of milk *per* day.

Young Useful, nine quarts;

Coquette eight quarts;

And Bull-neck eight quarts; each cow gives about one quart more in the morning than the evening.

N. B. The food—grass out of doors in the day, housed at night; food, hay, and green turnip-tops.

The same cows, the evening Dec. 22, and morning 23.

Red cow	evening 98	skimmed 108	morning after 88	skimmed 105
Young Useful	92	105	97	105
Coquette	93	105	94	103
Bull-neck	94	107	92	103

N. R. The food grass out of doors in the day, housed in the night; where, the food was hay, and scalded bran, a little malt-dust, no turnips.

* This experiment being tried in company of some farmers, they were desirous to see the effects of water upon milk by the instrument. An equal quantity of water was added, and then tried; when the mixture was reduced to 50; to which two drams of salt were afterwards added and dissolved—when tried again with this solution 80.

APPENDIX.

No. 2. Experiments regarding Milk.

THOMAS WAKEFIELD, Esq. Brook-farm *, about two miles and a half from Liverpool, keeps a regular account of the produce of his milk, butter, and amount of sales, posted up every fortnight; with remarks upon the effects of different food, change of weather, or any other particular cause, which may occasion any considerable variation in the amount of the different produce. These remarks are entered in to the margin—from these registers the surveyor has been favoured with the following extracts.

1st. An experiment made on seven cows, for three successive weeks. First week, they produced 189 quarts of milk. This week he took only one pint of drippings, or afterings, from each cow, each meal; which, together with the cream of the former or fore milk, produced 25½ lb. of butter.

The amount of this week's sales of sweet and churned milk and butter, from this method, was £2. 7s. 4d.

2d. Second week. The same cows produced 194 quarts of milk. This week he took half of the milk each cow gave each meal, as afterings or drippings; these, with the cream of the fore-milk, produced 28½ lb. of butter.

Amount of sales this week, from this management, was £2. 4s. 1d.

N. B. Although there was more butter produced, there was less new milk brought to market.

* Mr. Wakefield has applied the steam of warm water for some time past, in his stoves; and, by its effects, has produced some very luxuriant fruit, both pine and melons. Mr. Wakefield seems to think that a new field, in the process of vegetation, may be discovered through the means of this application.—But he is preparing to lay before the public, the particulars of the process and its effects.

3d. Third

3d. Third week. The same cows produced 187 quarts of milk. This week he took only half a pint of drippings from each cow, each meal, which, with the cream of the fore-milk, produced 23½ lb. of butter.

Amount of sales this week was £2 5s. 4d.

N. B. The fore-milk, or first drawn milk, is put into leaden cisterns, and is found to answer best, if not above three inches deep. The amount of sales includes the amount of sweet-milk, butter-milk, and butter, as produced from new milk.

From the foregoing experiment it appears, that though the second week's produce of both milk and butter was the greatest, yet the amount of sales was the least; which deficiency arises from the small quantity of skim milk, by churning so much afterings. Butter-milk being only ½d. per quart, skim-milk 1d.

4th. From the 1st. of May, 1790, to 30th April, 1791, 100 cows produced 171,270 quarts of new milk, 23,632 lbs. of butter, and amount of sales £2,854. 2s. 9d.

It would have been satisfactory if the foregoing curious statements, had been attended with a regular debtor and creditor account, with profit and loss, account of sales of cattle, with a number of other particulars; so as to have clearly stated the clear gains of such large gross receipts.

5th. The following statements may prove the advantage of regular churning, or rather disadvantage of irregular work. These operations being so very heavy, it became too much for a couple of men to support, which occasioned a machine to be procured, a cog-wheel, &c. and by which is effected, with a horse and a boy to drive, in 1½ hour, what was usually the labour of two men five hours.

Quantity of new milk.			Quantity of butter by hand-churning.		
Quarts.		Pounds.	£.	s.	d.
6,471	-	364	47	1	7
6,644	-	397	49	0	9
6,995	-	348	49	0	9
<u>Quarts 20,110</u>		<u>Pounds 1109</u>	<u>£145</u>	<u>3</u>	<u>1</u>

Quantity of new milk.			Quantity of butter by Machinery.		
Quarts.		Pounds.	£.	s.	d.
7,261	-	469	55	4	1
7,675	-	482	56	14	11
8,120	-	574	65	3	8
<u>Quarts 23,056</u>		<u>Pounds 1,525</u>	<u>£177</u>	<u>2</u>	<u>8</u>

The above quantities of milk were the produce of six successive fortnights.

P A

Therefore

Therefore if 20,110 quarts yield 1,109 pounds of butter, how many pounds will 23,156 quarts yield?

Answer 1,277

1,515 produced by machinery

248 pounds more than would have been produced by hand-churning, which, at 10d. per lb. is £10. 6s. 8d.

Quarts.	£.	s.	d.	Quarts.
Again, if 20,110 sell for	145	3	1	what will 23,156 sell for?
Answer	167	2	8	
	177	2	8	did sell for.

£10 0 0 profit by new mode of churning.

Again, if 23,156, gain £10, what will 271,270 quarts gain?

Answer £117. 2s. 11d.

Hence it appears, that a churning machine, on one hundred cows, in twelve months, will gain £117, besides the expense of labour.

A short-horned cow, upon an average of twelve months, yields nine quarts of new milk per day, and 4½ lb. of butter per week.

A Lancashire long-horn yields eight quarts of new milk per day, and four pounds of butter per week for twelve months.

N. B. In making the foregoing experiments, the cattle have had always the same kind of food. But to know the clear result the quantity of food consumed by the two breeds of cattle, should be clearly ascertained, before any decisive conclusion can be drawn. The produce of milk and butter is in favour of the Holderness—neat balance, not yet apparent, whether in favour of long or short horn.

THE SURVEYOR'S EXPERIMENTS.

I directed the usual quantity of milk, generally churned at one time, and collected according to custom, to be measured previous to the operation, 15½ gallons milk, three pints warm water added. After the butter was extracted, the milk measured again thirteen gallons, five pints. Quantity of butter produced 8 lb. 4 oz.

Again, directed the cream from all the cows, only to be collected and churned without any other milk: quantity, cream four gallons, and three pints of water added. Produce of butter 4 lb. 14 oz. of milk, after butter was extracted, four gallons one pint.

Observation. More butter, from quantity, in the last experiment; but a great deficiency of butter this week from this mode.

Let's

[114]

Less quantity is lost by extraction of butter than might have been expected, considering absorption of vessels, splashing over of milk, &c.

Both these experiments prove the great advantage of selling cream at 14d. per quart, in preference to churning.

Ergo. First, say butter worth, at 12d. per lb.	-	-	£. 4 4
Butter-milk, at 2d. per gallon, worth	-	-	0 8 3
			<hr/>

But the milk of the first 62 quarts, even at 2d. per quart only,			0 10 5½
without the trouble of churning, was worth	-	-	0 10 4
			<hr/>


Again, 4lb. 14 oz. butter worth, say	-	-	0 4 10
Butter-milk 4 gallons 1 pint, at 2d. per quart	-	-	0 0 8½
			<hr/>

Be: 4 gallons of cream, at 4s. 8d. per gallon, or 14d. per quart, worth			0 5 6
			<hr/>

In favour of cream			0 13 2
			<hr/>



S
455
A2
V. 6

S 455 .A2 v.6, no.1
General view of the agricultur
Stanford University Libraries

3 6105 041 641 205

Stanford University Libraries
Stanford, California

Return this book on or before date due.

<p>8 16 72 JUN 1986 JUN 1986</p>		
--	--	--

